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ABSTRACT

Games, activities and worksheets prepared by pilot teachers in a workshop on study skills for elementary school children are compiled. Introductory remarks explain the study skills component of the Wisconsin Design for Reading Development, discuss implementation of the program, and list pertinent materials and resources. The games, activities, and worksheets focus on three areas--maps, graphs and tables, and references--each of which is subdivided into strands. Strands of the map skills section deal with skills of representation, orientation, and measurement. Graphs and tables are treated separately. Materials on references cover utilization (book skills), location (alphabetizing and the Dewey Decimal System), and organization and evaluation (note taking and outlining skills). Most of the entries include a statement of the teachers' objectives and directions for constructing needed materials. Appendixes provide record keeping sheets, an explanation of the usefulness of the Wisconsin Study Skill Placement Surveys, and a statement of the skills and objectives of the seven levels comprising the study skills program. (GW)

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STUDY SKILLS
IMPLEMENTATION GUIDE

Oak Grove School District
San Jose, California

Produced by:
Study Skills Pilot Teachers
Educational Services Department

1975-76

BEST COPY AVAILABLE

SP010 199

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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PREFACE

The games, activities, and worksheets in the following sections were developed by the pilot teachers during the Study Skills Workshop. These materials reflect the teaching styles and needs of a variety of teachers which results in an understandable lack of uniformity in format and approach. Included are traditional lessons and complete skill centers, as well as single ideas or activities. Some of the ideas are completely original, while others were "borrowed" from a variety of sources. All, however, have been successfully used with children. They work!

Please do not consider this effort a complete guide. It is intended to serve as an aid to teachers during the implementation phase. Teachers should feel free to use the materials as they are presented or adapt them to suit their particular needs or approach to instruction.

The pilot teacher or field study teachers are valuable resources that should not be overlooked. Their experiences will help other teachers to implement Study Skills effectively. Available, too, are the members of the Educational Services Department. We are interested in your successes and your problems and will be happy to provide assistance to individual teachers or schools.

Study Skills Pilot Teachers

School	Pilot Teacher
Anderson	Terry Dorchak
Bernal	Deborah Walters
Blossom Valley	Lynne A. Alm
Calero	
Christopher	Sharon Greaney
Davis	Lilia McCracken
Del Roble	Lucille Wilson
Dickinson	Doris Rosales
Edenvale	Jonnie Shawkey Char Neff
Frost	Patricia L. Nass
Glider	Barbara Henderson
Herman	Pamela Chappell
Miner	Mark Dawson
Oak Ridge	William F. Sullivan
Parkview	Larry Shopbell
Sakamoto	Anthony Weiler
San Anselmo	Linda Negoro
Santa Teresa	Suzanne Whelton
Stipe	Maureen Pino

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Dickinson	Anita Bowen
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A. Study Skills Implementation Plans

The District has planned for the gradual implementation of Study Skills to occur in three steps: field study, pilot study, and implementation.

Field Study

An eight-week field study was conducted in 1973-74. Five teachers participated in the field study and were responsible for assisting in the training of the teachers for the pilot stage. The field study was designed to gather initial data to support the effectiveness of the Study Skills program.

Pilot Study

One teacher from each school participated in the pilot study. The pilot teachers received extensive training in Study Skills at a summer workshop and were also given opportunities to develop materials and activities for Study Skill instruction. The pilot teachers have used these ideas in Study Skills instruction throughout the 1974-75 school year. The most successful ideas and activities created by the pilot teachers are shared with you in this booklet. Pilot teachers will also assist schools in implementing the program.

Implementation

Study Skills will be implemented in Grades 4-8 during the 1975-76 school year. In the implementation year, teachers will be responsible for:

a. Teaching a maximum of five skills selected from any of three Study Skills strands or substrands.

b. Becoming familiar with the overall program as well as the basic materials.

c. Developing an appropriate strategy for introducing Study Skills into individual class programs.

d. Administering a post-test to determine achievement (80%) of the five skills taught.

e. Recording each child's progress on the Study Skills insert in the Reading Skills Folder.

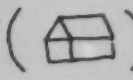
Primary teachers (Grades K-3) may teach Study Skills if they wish, but they will not be required to do so.

B. Wisconsin Design for Reading Development

"Study Skills" is the second component of the Wisconsin Design for Reading Development to be implemented in the District. It is similar to "Word Attack" in that skills are sequenced according to levels of difficulty. Testing materials are provided to allow teachers to measure attainment of each objective. The teacher is free to use any appropriate instructional approach and/or any available material or materials.

The Study Skills objectives are divided into three areas: Maps; Graphs and Tables; and References. These three areas are further divided into strands. A brief description of the strands and areas is presented here.

MAPS

1. Representation: The skills in Representation involve the ability to interpret distinct symbols which stand for features of the environment. The symbols tend to be more realistic at lower levels  and more abstract at higher levels. (= State Capitols)

2. Orientation: In the first substrand, the child learns to apply a grid system to the earth when concepts of latitude and longitude are taught. In order to master this concept, he must also use coordinates to locate points on the grid system. The second substrand teaches directional systems in determining direction on various map projections.

3. Measurement: This strand is also divided into two substrands: "The Scale" and "To Scale". "The Scale" ranges from approximations of size and distance to the use of standard units of measurement and their representation on maps. The substrand "To Scale" involves the child's understanding that one must make a representation (a map) in order to have an overview of the earth. The representation may vary in size, but it is always smaller than reality and in proportion to or "to scale" with that which it represents.

GRAPHS AND TABLES

1. Graphs: The child learns to make and interpret bar, line, circle, and picture graphs at increasingly complex levels.

2. Tables: As with graph skills, the types of tables and the types of skills increase in complexity as the child advances from one level to the next.

REFERENCES

1. Utilization: The Utilization strand is made up of book skills (locating books, parts of a book, as well as a variety of reference tools, such as dictionaries, encyclopedias, magazines, and indexes).

2. Location: Location consists of two substrands: alphabetizing and the application of alphabetizing to the library (card catalog and Dewey Decimal System).

3. Organization and Evaluation: Organization involves note-taking and outlining skills. The Evaluation substrand involves making judgements on the basis of limited information about whether certain materials will include information relevant to his topic.

Study Skills Strands and Substrands

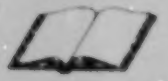
Maps

Representation	Orientation		Measurement	
	Grid	*Direction*	*"The Scale"*	*"To Scale"*
A.1		A.2	A.3	
B.1	B.2		B.3	
C.1.a, C.1.b	C.2		C.3.a, C.3.b	
D.1		D.2	D.3	
E.1		E.2	E.3	
F.1	F.2			F.3.a, F.3.b
G.1	G.2.a, G.2.b		G.3	

Graphs and Tables

Graphs	Tables
B.4	
C.4.a, C.4.b	C.5.a, C.5.b
D.4.a, D.4.b	D.5
E.4.a, E.4.b	E.5.a, E.5.b
F.4	F.5
G.4.a, G.4.b	G.5

References



Utilization		Location		Organization & Evaluation	
Book Skills	*Reference Materials*	*Alphabetizing*	*Application in Library*	*Organization*	*Evaluation*
C.6		C.7			
D.6.a,b,&c		D.7.a, D.7.b		D.8.a	D.8.b, D.8.c
E.6.a	E.6.b,c,&d		E.7.a, E.7.b	E.8.a	E.8.b,c,&d
	F.6.a, F.6.b		F.7.a, F.7.b	F.8.a	F.8.b
	G.6		G.7	G.8	

Note: Codes refer to specific skills in the "Statement of Skills and Objectives for Study Skills" (see appendix).

C. Study Skills in the Elementary Curriculum

Unlike "Word Attack" skills, Study Skills are useful only when applied to research situations. They constitute a means to an end rather than an end in themselves. Study Skills are most effective, therefore, when integrated into the content areas. This concept provides the classroom teacher numerous opportunities to introduce Study Skills into an already established classroom program. "Graphs and Tables", for instance, can be integrated quite easily into the map program. "Maps" are a logical adjunct to social studies, and skills such as outlining or note-taking are frequently taught in language arts.

The pilot teachers recommend that Study Skills be taught as they appear in the strand chart on page 4 . This simply means that all skills relating to maps, for instance, will be introduced as a unit, and when mastered, skills A1, B1, C1a, C1b, D1, etc., will be marked in the folder. Teaching to a single strand or substrand allows the teacher to integrate Study Skills more smoothly into the content areas. This approach also allows an entire class to participate in a unit even though the children may be grouped according to ability.

Study Skills are easily adapted to a learning center or skill center approach. The pilot teachers have developed materials for center development. These suggestions are included in this booklet for your use. This approach offers the teacher even more flexibility for grouping and scheduling.

The Study Skills framework offers endless possibilities insofar as approach and teaching strategy are concerned. Teachers should feel free to experiment and develop an approach that seems appropriate for them and for their pupils. No matter which teaching strategy a teacher decides to use, several points should be kept in mind.

1. A successful Study Skills program depends upon the participation of all the teachers.

2. A successful Study Skills program must have systematic and regular monitoring of skill assessments and growth.

3. A successful Study Skills program must provide for systematic reinforcement and application of skills.

4. A successful Study Skills program recognizes individual differences in needs and abilities among students and seeks to provide instruction accordingly.

D. Implementation Procedures

Placement

Prior to beginning the implementation process, the teacher must decide which of the strands or substrands (see page 4) he/she plans to emphasize. This decision should be based on the teacher's knowledge of the students' background, ability, and needs, and upon the teacher's plans for content curriculum. Once this decision has been made, the teacher should obtain the appropriate substrand placement survey. These tests were used quite successfully by pilot teachers. The tests will allow the teacher to determine quickly and accurately where to place each child in relation to the substrands. After the first year of implementation, the marked folder may provide enough information for placing students, but the placement tests are recommended especially during the "break-in" period. Directions for administering the placement survey are printed in the Appendix.

Grouping

The degree to which a teacher groups will vary somethat according to the teaching strategy used in the classroom. Some pilot teachers taught to the entire class. Nevertheless, many felt that the most successful instruction occurred in small groups. A cluster of skills or a single skill can be the basis for forming your instructional groups. For instance, one group of children might be working in Maps/Representation and a second group working in Maps/Orientation (skill cluster). It is also possible that both groups might be working with the same substrand of skills--Group A: Skills A1, B1, and C1a; Group B: Skills D1, E1, and F1.

Skills should be taught daily from two to three weeks. If you do not teach Study Skills on a daily basis, the instructional period may last even longer. Avoid the temptation to post-test children after a short period of instruction even though they appear to know the skill. Experience indicates that most children require many exposures to a concept before that concept is retained. In other words, OVERTEACH.

When a teacher has observed the children successfully applying the skill in a variety of contexts, children should be tested with the appropriate post-test. Depending upon the results of the post-test, the teacher may choose to re-group or proceed to the next skill with the same group.

Testing and Record Keeping

Super-organized teachers may ignore this section. This information is presented for the kind of person who hates to balance checkbooks, never keeps an up-to-date grade book, and finds the recording-keeping, testing and overall organization of the Wisconsin Design a pain! Wisconsin is a management system that allows teachers to diagnose individual skill development in each child. As such, it is a valuable aid to instruction for the disorganized, as well as the organized. There are some things that even the most disorganized teacher can do to ease the pain.

The first and most important pain-killer is to control the number of skills one attempts to introduce at any one time. The pilot teachers recommend that no more than five Study Skills be attempted during the first year of implementation! If a teacher manages five skills painlessly and wants to teach additional skills, he/she should feel free to do so. Be careful, however, of attempting too much too soon! Teachers should try to avoid testing entire skill levels, whole classes, or total pods at the same time. This is not only poor testing practice, but it also increases the number of tests to be corrected, scores to be recorded, and children to be grouped. Test a single skill in a small group. The children will respond better and the teacher will find the whole record-keeping process easier to bear. Placement surveys are the only tests recommended for large-group use. (See Appendix.)

Marking skills in the Study Skills inserts/Reading Skills Folder can be time-consuming. Some of the pilot teachers found that keeping a separate record sheet for skill groups or skill clusters to be easier and more efficient. Sample record sheets are shown in the Appendix. Record sheets are used during the entire instructional period. Mark the Reading Skills Folder at the end of the grading period.

Intermediate (Grades 7-8) teachers involved in Study Skills instruction are particularly advised to use a record-keeping sheet or roll book page. Each teacher will then be able to monitor the skills for which he/she is responsible regardless of the content area. All teachers can then mark the Reading Skills Folder at the close of the grading period.

Several teachers allowed the students to monitor their own skill progress in chart or graph form. This activity not only relieves the teacher of part of the record-keeping, but it also provides students an opportunity to apply skills in a practical situation. Teachers attempting this technique reported that this device was highly motiviational as well.

Study Skills Insert

The objectives for Study Skills were revised by Wisconsin after the printing of the original District Reading Skills Folder. The Study Skills listed in the Reading Skills Folder do not, of course, correspond to the Wisconsin testing materials currently available. The District could reprint new folders which list the revised skills, but teachers would then be forced to transfer all the markings from the old folder to the revised folder! The most reasonable solution seemed to be printing of an insert listing the revised skills. The insert fits easily into the old folder. Middle and upper grade teachers should cross off the Study Skills section of the Reading Skills Folder and start a Study Skills insert for each student.

Completely revised folders will be printed for students in kindergarten or first grade who are just starting in Wisconsin. These folders will be plainly marked, Revised - 1975, to avoid confusion.

E. Materials and Resources for Implementation

Teachers Resource File

The Teachers Resource File (TRF) is probably the most valuable aid to teachers during implementation. Each school was provided with a TRF during the pilot stage. Additional files can be purchased from:

NCS/Interpretive Scoring Systems
4401 West 76 Street
Minneapolis, Minnesota 55435
Request: Teachers Resource File/Study Skills 5-3 $10.50

The pilot teachers, without exception, felt that the suggested activities were interesting, fun, and appropriate. Many teachers used the TRF exclusively for Study Skills instruction. One can, if necessary, get by with the TRF as the only resource.

ESC Materials

A list of items available in the ESC follows. These items are available for check-out on the usual basis.

MAPS

PL	2699	Cartocraft teaching aids
EA	1451	Class kit for mapping
EA	3128	How maps and globes help us
MK	3083	Introduction to maps
TRC	618	Latitude
TRC	726	Longitude
TRC	613	Longitude and latitude
PL	234	Map and globe activities for children
OT	3121	Map and globe understandings
TRC		Map mastery
OT	3126	Map reading and interpretation
TRC	612	Simple geographic terms
PL	79	Spark
MK	3082	Working with maps

GRAPHS AND TABLES

OT	3125	Charts and drawings understanding
FS	3077	Graphs
EA	3127	How charts and drawings help us
FL	1459	Plant growth--graphing
TRC	626	What is scale

REFERENCES

FS	2974	Author cards
TRC	1418	The card catalog
TRC	1428	Dewey Decimal System #1
TRC	1427	Dewey Decimal System #2
TRC	1417	How to find a book in the library
FSS	3081	Library services
FS	2975	Parts of the catalog card
TRC	1419	Reference books #1
TRC	1429	Reference books #2
FS	2972	Subject cards
TRC	534	Taking notes
FS	2973	Title cards
EA	3079	Vicalog: Eye Gate visual card catalog

Tests

Tests and test directions are non-consumable.

Title	Order Number		
	Test	Directions	Ans. Sheet
Representation	CR-SS-R	CR-SS-R/T	CR-SS-R/AS
Orientation	CR-SS-O	CR-SS-O/T	CR-SS-O/AS
Measurement	CR-SS-M	CR-SS-M/T	CR-SS-M/AS
Graphs	CR-SS-G	CR-SS-G/T	CR-SS-G AS
Tables	CR-SS-T	CR-SS-T/T	CR-SS-T/AS
Utilization	CR-SS-U	CR-SS-U/T	CR-SS-U/AS
Location	CR-SS-L	CR-SS-L/T	CR-SS-L/AS
Organization & Evaluation	CR-SS-E	CR-SS-E/T	CR-SS-E/AS

Skill Tests

Criterion-referenced tests are available in alternate forms (P and Q) for upper level skills only. Levels E, F, and G are printed in a non-consumable format with consumable answer sheets. These levels are also available in booklet form at the ESC. The same answer sheets may be used with either booklets checked out from the ESC or the printed tests.

Order tests early so that you will have an opportunity to prepare students for the test format.

Title	Form	Skill	Order No.
Level A			
Test 2--Position of Objects	P	A.2	CR-SS-A2-1
Test 3--Measurement: Size	P	A.3	CR-SS-A3-1
Test Administrator's Manual			CR-SS-A
Level B			
Test 1--Picture Symbols	P	B.1	CR-SS-B1-1
Test 2--Picture Grids	P	B.2	CR-SS-B2-1
Test 3--Measurement: Distance	P	B.3	CR-SS-B3-1
Test 4--Graphs: Relative Amount	P	B.4	CR-SS-B4-1
Test Administrator's Manual			CR-SS-B
Level C			
Test 1--Non-Pictorial Symbols	P	C.1.a	CR-SS-C1a-1
Test 2--Color Keys	P	C.1.b	CR-SS-C1b-1
Test 3--Number Letter Grids	P	C.2	CR-SS-C2-1
Test 4--Measurement: Size	P	C.3.a	CR-SS-C3a-1
Test 5--Measurement: Distance	P	C.3.b	CR-SS-C3b-1
Test 6--Graphs: Exact Amounts	P	C.4.a	CR-SS-C4a-1
Test 7--Graphs: Differences	P	C.4.b	CR-SS-C4b-1
Test 8--Tables: Relative Amounts	P	C.5.a	CR-SS-C5a-1
Test 9--Tables: One Cell	P	C.5.b	CR-SS-C5b-1
Test 11--Alphabetizing	P	C.7	CR-SS-C7-1
Test 11--Alphabetizing	Q	C.7	CR-SS-C7-2
Test Administrator's Manual			CR-SS-C

Level D

Test 1--Point and Line Symbols	P	D.1	CR-SS-D1-1
Test 3--Scale: Whole Units	P	D.3	CR-SS-D3-1
Test 4--Graphs: Differences	P	D.4.a	CR-SS-D4a-1
Test 5--Graphs: Approximate Amounts	P	D.4.b	CR-SS-D4b-1
Test 6--Tables: Differences	P	D.5	CR-SS-D5-1
Test 7--Indexes	P	D.6.a	CR-SS-D6a-1
Test 9--Tables of Contents	P	D.6.c	CR-SS-D6c-1
Test 10--Alphabetizing	P	D.7.a	CR-SS-D7a-1
Test 11--Guide Words	P	D.7.b	CR-SS-D7b-1
Test 12--Headings and Subheadings	P	D.8.a	CR-SS-D8a-1
Test 13--Selecting Sources	P	D.8.b	CR-SS-D8b-1
Test 14--Facts or Opinions	P	D.8.c	CR-SS-D8c-1
Test 7--Indexes	Q	D.6.a	CR-SS-D6a-2
Test 9--Table of Contents	Q	D.6.c	CR-SS-D6c-2
Test 10--Alphabetizing	Q	D.7.a	CR-SS-D7a-2
Test 11--Guide Words	Q	D.7.b	CR-SS-D7b-2
Test 12--Headings and Subheadings	Q	D.8.a	CR-SS-D8a-2
Test 13--Selecting Sources	Q	D.8.b	CR-SS-D8b-2
Test 14--Facts and Opinions	Q	D.8.c	CR-SS-D8c-2
Test Administrator's Manual	P and Q		CR-SS-D

Level E (Tests are non-consumable.)

Test 1--Point, Line and Area Symbols	P	E.1	CR-SS-E1-1
Test 2--Intermediate Directions	P	E.2	CR-SS-E2-1
Test 3--Scale: Multiple Whole Units	P	E.3	CR-SS-E3-1
Test 4--Graphs: Difference	P	E.4.a	CR-SS-E4a, E4b-1
Test 5--Graphs: Purpose and Summary	P	E.4.b	
Test 6--Tables: Multiplicative Differences	P	E.5.a	CR-SS-E54, E5b-1
Test 7--Tables Purpose and Summary	P	E.5.b	
Test 8--Indexes	P	E.6.a	CR-SS-E6a-1
Test 9--Dictionary Meanings	P	E.6.b	CR-SS-E6b-1
Test 10--Cross References	P	E.6.c	CR-SS-E6c-1
Test 12--Guide Words	P	E.7.a	CR-SS-E7a-1
Test 13--Guide Cards	P	E.7.b	CR-SS-E7b-1
Test 15--Specialized References	p	E.8.b	CR-SS-E8b-1
Test 17--Fact Checking	P	E.8.d	CR-SS-E8d-1
Test 8--Indexes	Q	E.6.a	CR-SS-E6a-2
Test 9--Dictionary Meanings	Q	E.6.b	CR-SS-E6b-2
Test 10--Cross References	Q	E.6.c	CR-SS-E6c-2
Test 12--Guide Words	Q	E.7.a	CR-SS-E7a-2
Test 13--Guide Cards	Q	E.7.b	CR-SS-E7b-2
Test 15--Specialized References	Q	E.8.b	CR-SS-E8b-2
Test 17--Fact Checking	Q	E.8.d	CR-SS-E8d-2
Test Administrator's Manual	P and Q		CR-SS-E

Level E (Consumable answer sheets)

Tests 1, 2, 3, 4, and 5	P		CR-SS-E1/5-AS
Tests 6, 7, 8, 9, and 10	P and Q		CR-SS-E6/10-AS
Tests 12, 13, 15, and 17	P and Q		CR-SS-E12/17-AS

Level F (Tests are non-consumable.)

Test 1--Maps: Analysis	P	F.1	CR-SS-F1-1
Test 2--Map Projections	P	F.2	CR-SS-F2-1
Test 3--Inset Maps	P	F.3.a	CR-SS-F3a-1
Test 4--Different Scales	P	F.3.b	CR-SS-F3b-1
Test 5--Graphs: Differences	P	F.4	CR-SS-F4-1
Test 6--Schedules: Relationship	P	F.5	CR-SS-F5-1
Test 7--Subject Index	P	F.6.a	CR-SS-F6a-1
Test 8--Dictionary Pronunciation	P	F.6.b	CR-SS-F6b-1
Test 9--Card Filing Rules	P	F.7.a	CR-SS-F7a-1
Test 10--Dewey Decimal System	P	F.7.b	CR-SS-F7b-1
Test 11--Outlining	P	F.8.a	CR-SS-F8a-1
Test 12--Catalog Cards	P	F.8.b	CR-SS-F8b-1
Test 7--Subject Index	Q	F.6.a	CR-SS-F6a-2
Test 8--Dictionary Pronunciation	Q	F.6.b	CR-SS-F6b-2
Test 9--Card Filing Rules	Q	F.7.a	CR-SS-F7a-2
Test 10--Dewey Decimal System	Q	F.7.b	CR-SS-F7b-2
Test 11--Outlining	Q	F.8.a	CR-SS-F8a-2
Test 12--Catalog Cards	Q	F.8.b	CR-SS-F8b-2
Test Administrator's Manual	P and Q		CR-SS-F

Level F (Consumable answer sheets)

Tests 1, 2, 3, and 4	CR-SS-F1/4-AS
Tests 5, 6, 7, and 8	CR-SS-F5/8-AS
Tests 9, 10, 11, and 12	CR-SS-F9/12-AS

Level G (Tests are non-consumable.)

Test 1--Maps: Synthesis	P	G.1	CR-SS-G1-1
Test 2--Latitude and Longitude	P	G.2.a	CR-SS-G2a-1
Test 3--Meridians and Parallels	P	G.2.b	CR-SS-G2b-1
Test 4--Fractional Units	P	G.3	CR-SS-G3-1
Test 5--Graphs: Multiplicative Differences	P	G.4.a	CR-SS-G4a, G4b-1
Test 6--Graphs: Projecting and Relating	P	G.4.b	
Test 7--Schedules: Problem Solving	P	G.5	CR-SS-G5-1
Test 8--Readers' Guide	P	G.6	CR-SS-G6-1
Test 9--Card Catalogs	P	G.7	CR-SS-G7-1
Test 10--Outlining	P	G.8	CR-SS-G8-1

Test 8--Readers' Guide	Q	G.6	CR-SS-G6-2
Test 9--Card Catalogs	Q	G.7	CR-SS-G7-2
Test 10--Outlining	Q	G.8	CR-SS-G8-2
Test Administrator's Manual	P and Q		CR-SS-G

Level G (Consumable answer sheets)

Tests 1, 2, and 3	CR-SS-G1/3-AS
Tests 4, 5, 6, and 7	CR-SS-G4/7-AS
Tests 8, 9, and 10	CR-SS-G8/10-AS

Librarians

The school librarian can assist in Study Skills instruction either by providing necessary materials, setting up learning centers, or doing the actual instruction. Do not hesitate to request help from the librarian for the following skills:

REFERENCES/UTILIZATION

C.6	Develops book skills
D.6.a	Begins to use indexes
D.6.c	Uses tables of contents
E.6.a	Refines use of indexes
E.6.c	Uses cross references
E.6.d	Uses a variety of sources
F.6.a	Uses subject index
G.6	Uses Readers' Guide

REFERENCES/LOCATION

C.7.b	Uses guide words in simple reference books
E.7.a	Uses guide words and guide letters
E.7.b	Uses guide cards
F.7.a	Applies card filing rules
F.7.b	Uses Dewey Decimal System
G.7	Uses card catalog to locate reference materials

REFERENCES/ORGANIZATION AND EVALUATION

D.8.a	Uses headings and subheadings
D.8.b	Selects relevant sources
E.8.b	Selects specialized reference books
E.8.c	Considers special features of books
F.8	Uses information on catalog cards to select material

Placement Tests

A placement (screening, break-in) test has been developed for each of the sub-strands in Study Skills. The use of these tests will allow teachers to quickly assess the needs of children. These tests can be ordered from the warehouse.

Tests and test directions are non-consumable.

Title	Tests	Directions	Ans. Sheet
Representation (Placement Survey I)	CR-SS-R	CR-SS-R/T	CR-SS-R/AS
Orientation (Placement Survey IV)	CR-SS-O	CR-SS-O/T	CR-SS-O/AS
Measurement (Placement Survey VII)	CR-SS-M	CR-SS-M/T	CR-SS-M/AS
Graphs (Placement Survey II)	CR-SS-G	CR-SS-G/T	CR-SS-G/AS
Tables (Placement Survey V)	CR-SS-T	CR-SS-T/T	CR-SS-T/AS
Utilization (Placement Survey III)	CR-SS-U	CR-SS-U/T	CR-SS-U/AS
Location (Placement Survey VI)	CR-SS-L	CR-SS-L/T	CR-SS-L/AS
Organization and Evaluation (Placement Survey VIII)	CR-SS-E	CR-SS-E/T	CR-SS-E/AS

ADDITIONAL MATERIALS AND RESOURCES RECOMMENDED FOR PURCHASE

Readiness for Map Skills A, # 224 (grade 2)	50¢
Map Skills for Today B, #234 (grade 3)	50¢
Map Skills for Today C, #241 (grade 4)	50¢
Map Skills for Today D, #251 (grade 5)	50¢
Map Skills for Today E, #261 (grade 6)	50¢
Map Skills Games A, #758 (grade 2)	7.95
Map Skills Games B, #759 (grade 3)	7.95
Map Skills Games C, #776 (grade 4)	7.95
Map Skills Games D, #794 (grade 5)	7.95
Map Skills Games E, #795 (grade 6)	7.95
Table and Graph Skills Book, #230 (grade 3)	50¢
Table and Graph Skills Book, #240 (grade 4)	50¢
Table and Graph Skills Book, #250 (grade 5)	50¢
Table and Graph Skills Book, #260 (grade 6)	50¢

Source: Scholastic Book Services
904 Sylvan Avenue
Englewood Cliffs, NJ 07632

Learning to Use the Library Book, #264 (grade 3)	45¢
Learning to Use the Library Book, #265 (grade 4)	45¢
Learning to Use the Library Book, #266 (grade 5)	45¢
Learning to Use the Library Book, #267 (grade 6)	45¢
Sound Filmstrip #766	35.00
Complete Kit (Sound filmstrip and 30 Learning to Use the Library Books)	44.95

Source: Xerox Education Publications
Education Center
Columbus, Ohio 43216

Large plastic floor grid 7.00

Source: DLM
7440 Natchez Avenue
Niles, Illinois 60648

Teacher's guides and dictionaries available as State Instructional Materials:

American Heritage School Dictionary	5.00
Teacher's edition	1.00
Random House Dictionary of the English Language	4.53
Teacher's edition	1.13

How to Use the Dictionary (10 cassettes)	76.85
Teacher's guide	1.59
Harcourt Brace School Dictionary	5.28
Workbook I	.79
Workbook II	.66

Source: Order with school credits (AB 531)

Activities for

MAPS

Activity
Level B, Skill 2
Level C, Skill 2

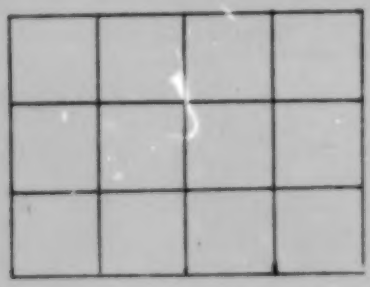
TITLE: Grid Game (open ended)

OBJECTIVE: Level B, Skill 2: Locates points on simple picture grids
Level C, Skill 2: Locates points on number-letter grids

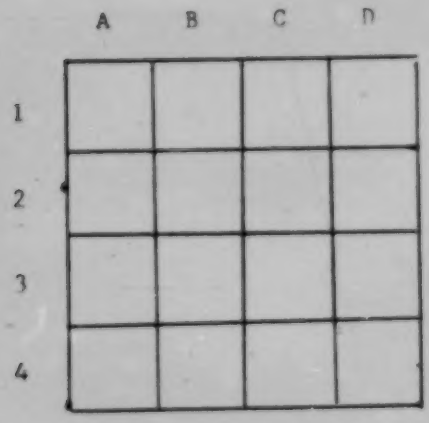
MATERIALS: Railroad board, pens, laminating film

DIRECTIONS FOR CONSTRUCTION:

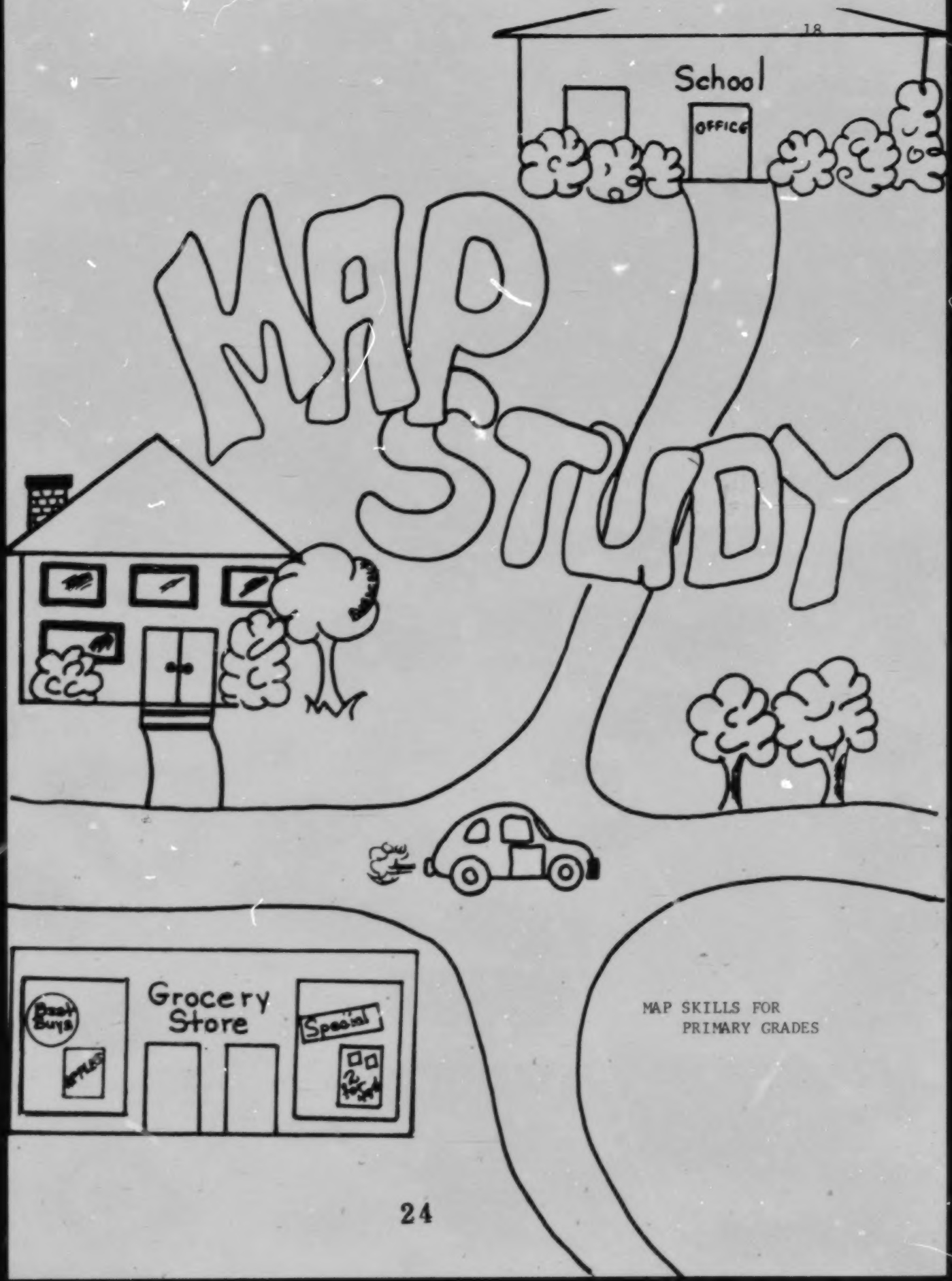
1. Draw desired size grid on railroad board with pen.
2. Laminate.
3. Tape grid to chalkboard.
4. Draw pictures on board to achieve Level B.



5. Draw numbers on chalkboard to achieve Level C.



May be used to reinforce reading or math skills as well as grid reading; e.g., "Read the word in A-3."



MAP SKILLS FOR
PRIMARY GRADES

Enrichment
Map Skills

THE WORLD

Great, wide, beautiful, wonderful world,
With the wonderful water round you curled,
And the wonderful grass upon your breast,
World, you are beautifully dressed.

MAPS

A map is a picture
Of where we are going.
The wiggly lines show us
Where rivers are flowing.
The red lines are highways
On which we will travel
The black lines are byways
Topped sometimes with gravel.
The dots are the cities
Where gas stations are
And each capital city
Is marked with a star.

GEOGRAPHY

I think geography is fun!
Upon the map, with care,
I trace strange countries, one by one,
And travel everywhere!

I seek out cities far away,
Follow down rivers blue,
Trace here a lake, and there a bay,
Whose names to me are new.

MAKING MAPS

I love to make maps!
I think it's great fun--
Making the boundaries,
And then, one by one,
Putting in railroads.
And each river bend,
And the tiny towns,
Where little roads end.
I draw in mountains,
And often a lake,
And I've even had
Long bridges to make!
I like to do highways,
And when they are drawn,
I dream that they take me
Where I've never gone.

MAPS

I like to study foreign maps;
Sometime I'll take a trip perhaps.
I like to hop upon a plane,
And fly to distant sunny Spain.
I'd like to see the River Nile,
And linger there a little while.
I'd like to see the London Tower,
This very month and day and hour.
But if I cannot go today,
I'll play that I am going away.
I'd like to study foreign maps;
Sometime I'll go away perhaps.

Lesson Plan
Level A - C

MAP SKILLS LESSON PLAN

COGNITIVE OBJECTIVES: REPRESENTATION

Level A: The child reproduces an arrangement of objects through use of three-dimensional models and places them on a floor map to reproduce the actual arrangement of houses in his neighborhood.
Level B: The child uses pictorial and nonpictorial symbols to interpret maps.
Level C: The child uses a key to interpret maps.

COCNITIVE OBJECTIVES: ORIENTATION

Level B: The child uses coordinates to locate points and to describe the location of points on picture grids.
Level C: The child uses coordinates to locate points and to describe the location of points on number-letter grids.

AFFECTIVE OBJECTIVES:

1. The child, through cooperation and group interaction, will learn positive aspects of depending on the group to accomplish a task.
2. The child will be motivated of ways to create a desire to use maps for specific information.

PROCEDURE: Motivation and Orientation

Tell the class that this is a Map Treasure Hunt. They will locate their treasures using the contract in their folder. Introduce contract. Leave much room for discovery. Assign team leaders and readers. Assign teams to centers. They will locate their materials and assignments by using the grid on the contract. Supervise movement and observe children beginning. Help at specific centers when needed. Answer questions to avoid frustration. This is to be a "fun" experience. Leave centers as they found them. They will go to the next center at the next period.

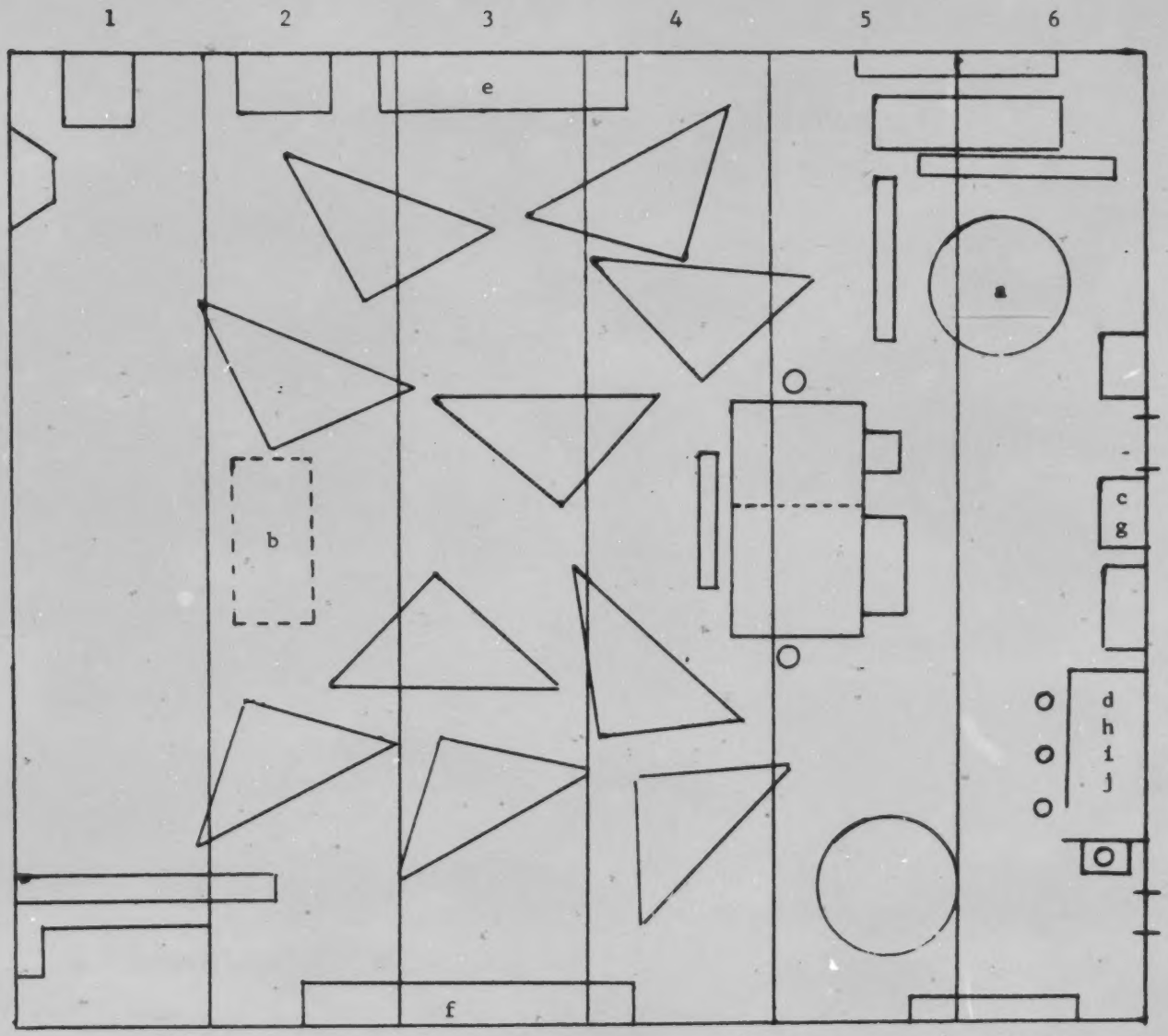
EVALUATION:

Note: Our classes have already had experience with Wisconsin Study Skills as directed in Teachers' Resource File for above cognitive objectives. Therefore, this is not presentative of any information, but the center is designed for review, discovery, and FUN!

Contract, Part 1
Map Skills

Name _____

MAP TREASURES



FIND YOUR CENTER!

27

a.	B-7	c.	C-7	e.	A-3	g.	C-7	i.	E-7
b.	D-2	d.	E-7	f.	F-3	h.	E-7	j.	E-7

Contract, Part 2
Map Study

Use the front sheet to locate the center.

Teacher Check

_____ a. Go to the Art Center. Make your house. Put on your house number. Make flowers on it. Make some trees for your yard. Put it on the big floor map. What else can you add to the big map?

_____ b. With your finger, trace the route you walk to school from your house. Write your route on a piece of paper. Give the directions and street names. Can you also write how your friend goes to school? Give your paper to your teacher.

_____ c. Use the wall maps of "Where Two Second Graders Live" and "Greater Metropolis." Do this with a partner and answer the questions to each other.

_____ d. Do the _____ School Map dittos. Show the paper to your teacher.

_____ e. Put your name on a little flag and pin it on the places you have been in the United States. Work the U. S. puzzle.* Can you find them on the big map? Use the ditto. Color the states where you have been. Write a story about your trip. Make a title and use your punctuation. Did you fly? Did you go by car?

_____ f. Use the San Jose City Map Center. Answer the questions there.

_____ g. Read pages 30-64 in the little book "Where in the World Do You Live?" Discuss the questions with your team. What did you learn? If there is time, read the book "Which Way?"

_____ h. Do the worksheet "Find the Buried Treasure". Look at the other maps at this center. What can you discover about them?

_____ i. Do the worksheet "Visiting New Town".

_____ j. Do the worksheet "Crater Lake National Park".

Extra time: Play "Battleship"

* Commercial puzzle

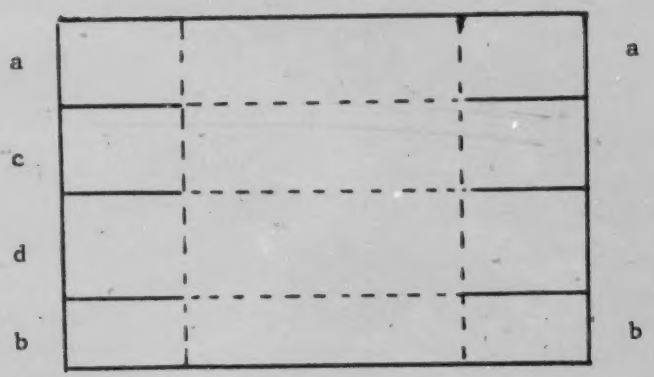
Activity
Level A, Skill 1

TITLE: Make Your House

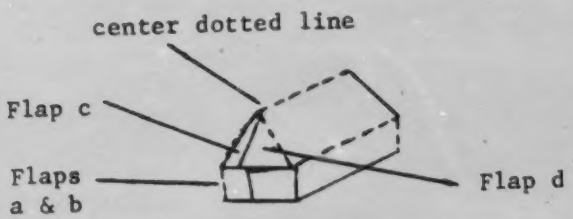
OBJECTIVE: Level A, Skill 1

MATERIALS: Butcher paper (large floor map), 8½x11 tag or construction paper on which house pattern has been run, colored construction paper, pens, crayons, paste, scissors.

DIRECTIONS: 1) A large map of the school attendance area is drawn on butcher paper and taped to floor.
2) Write in street names, locate school, etc.
3) Ditto the house pattern onto 8½x11 tag or construction paper.

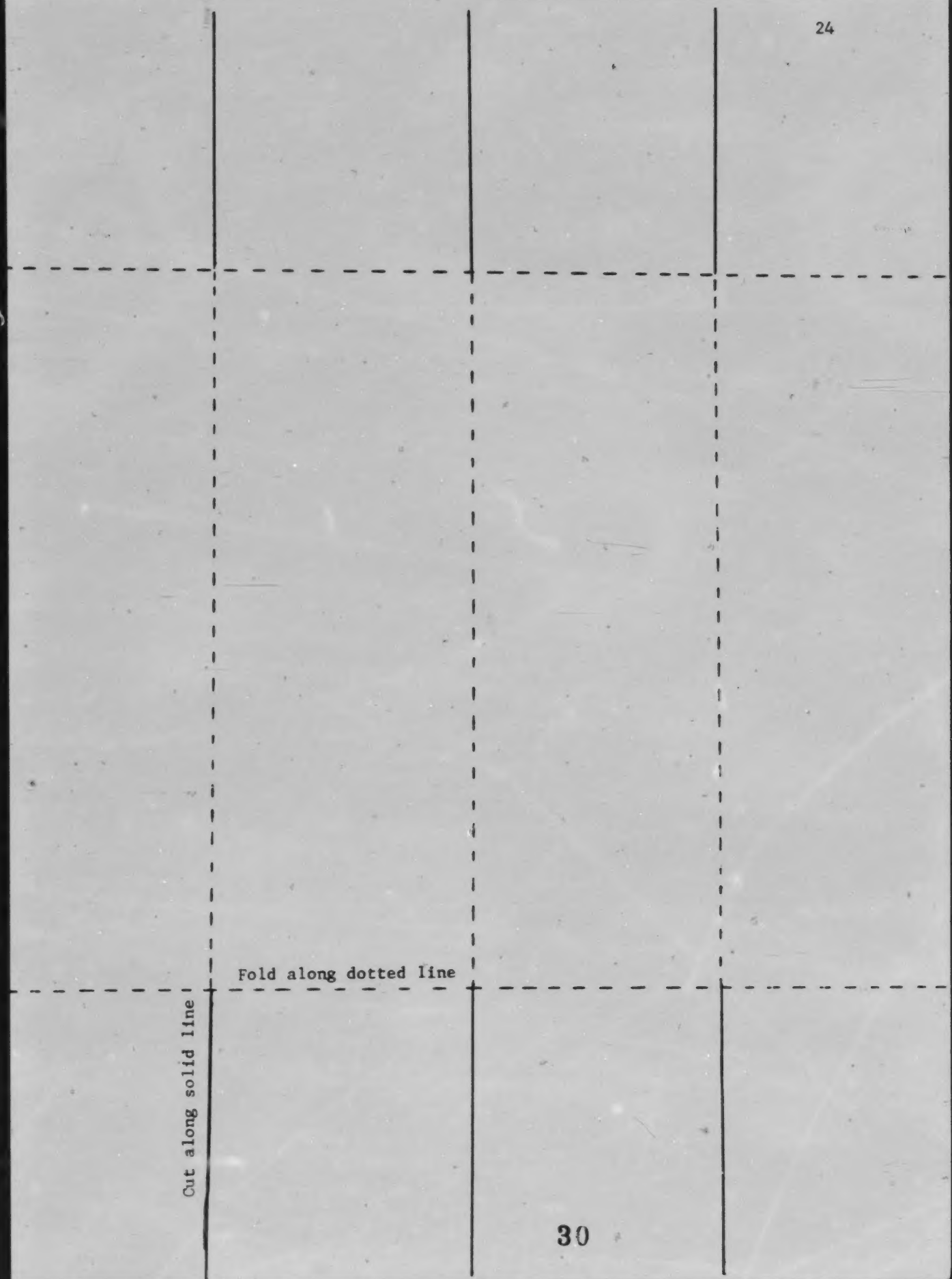


a. Cut along solid lines. Fold along lengthwise dotted lines.
b. Then fold on the center dotted line becomes the peak of the roof. Flaps a and b fold over outside c and d to form end of house.



c. Staple or paste end.
d. Decorate with construction paper and pen.

4. Place the house on the proper street on the floor map.


Fold along dotted line
Cut along solid line

Activity
Level B, Skill 1

TITLE: _____ School
Insert school name

OBJECTIVE: Level B, Skill 1

MATERIALS: Ditto masters, pencils, map of school plant

DIRECTIONS:
1) Draw an outline map of your school on a ditto master. Duplicate enough copies for center or class.
2) Print instruction (see attached page) on poster.
3) Children are to mark their school map according to instructions.

It may be necessary to change questions for your particular school.

_____ SCHOOL MAP ACTIVITY

1. Map a grid on this map and label it.
2. Use a symbol for the water fountains.
3. Show the room where you get balls for recess.
4. Put the restrooms on your map.
5. Show the bench and the tanbark area.
6. Draw the way we walk out of our room to the playground.
7. Write "B" where our boys line up to go in the room.
8. Write "G" where our girls line up to go in the room.
9. With a partner, play a game of locating points and naming the things at that point.
10. Can you add anything else to the map?

Activity
Level C, Skill 1a

TITLE: San Jose City Map Center

OBJECTIVE: Level C, Skill 1a--Use a Key

MATERIALS: Commercially produced map of San Jose (Sources: AAA/free to members; oil companies)

DIRECTIONS: Children refer to the San Jose map to answer questions such as:

1. How many parks can you find?
2. What symbol is used to show schools?
3. Can you find _____ school?
4. What symbols are used for churches? How many can you find?

Worksheet
Level C, Skill 1a
Level E, Skill 2

CRATER LAKE NATIONAL PARK

Map A and Map B show the same national park, Crater Lake. Which map shows cities near the park? Which one would you use while exploring the park?

Map Reading

Read Map A. Then, underline each true sentence.

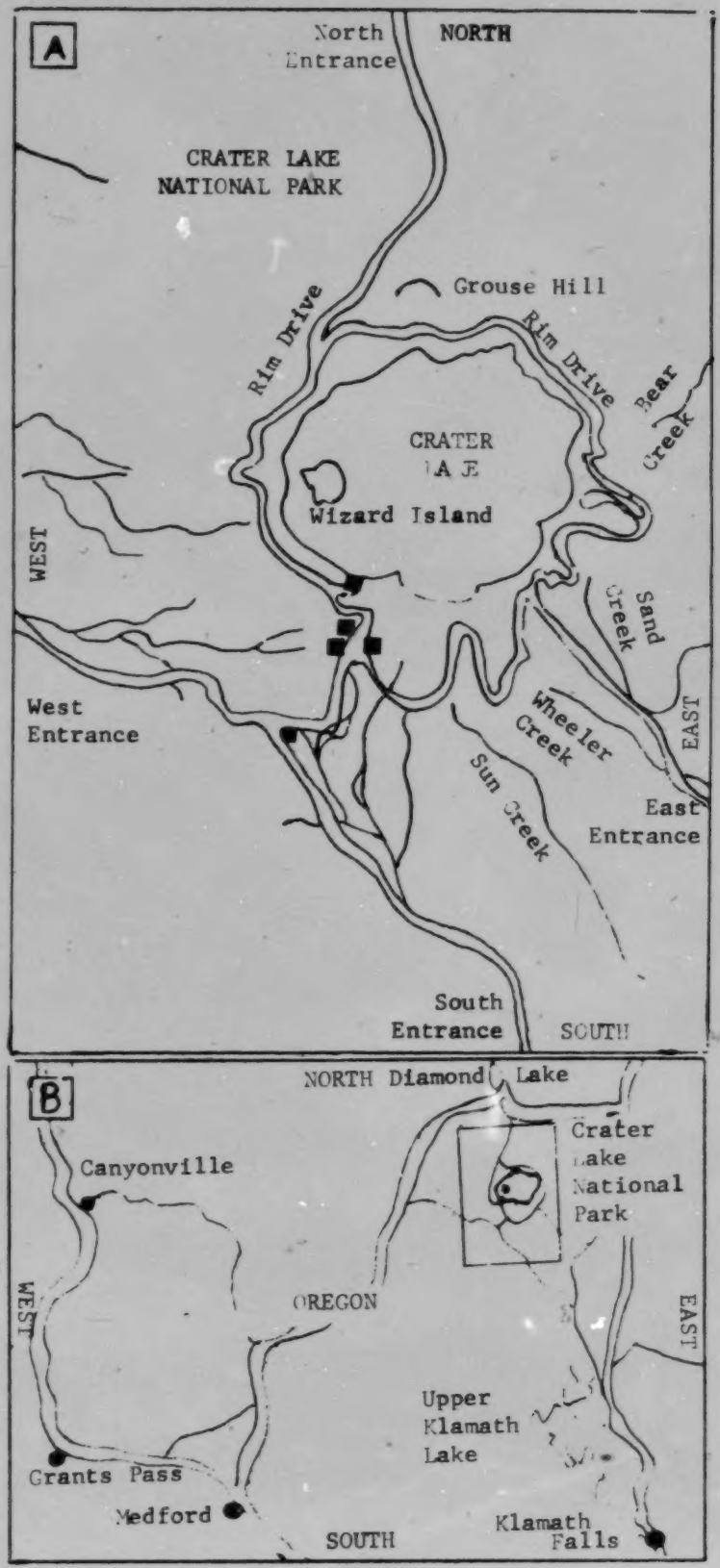
1. The park has five entrances.
2. Rim Drive goes around the lake.
3. Wizard Island is on the eastern part of the lake.
4. Most of the creeks are in the southern half of the park.
5. Sun Creek is west of the lake.
6. The buildings are mostly south of Crater Lake.
7. Grouse Hill is closer to the north entrance than to the east entrance.

Read both maps. Then, complete the sentences below, using words from this list: north, east, south, west.

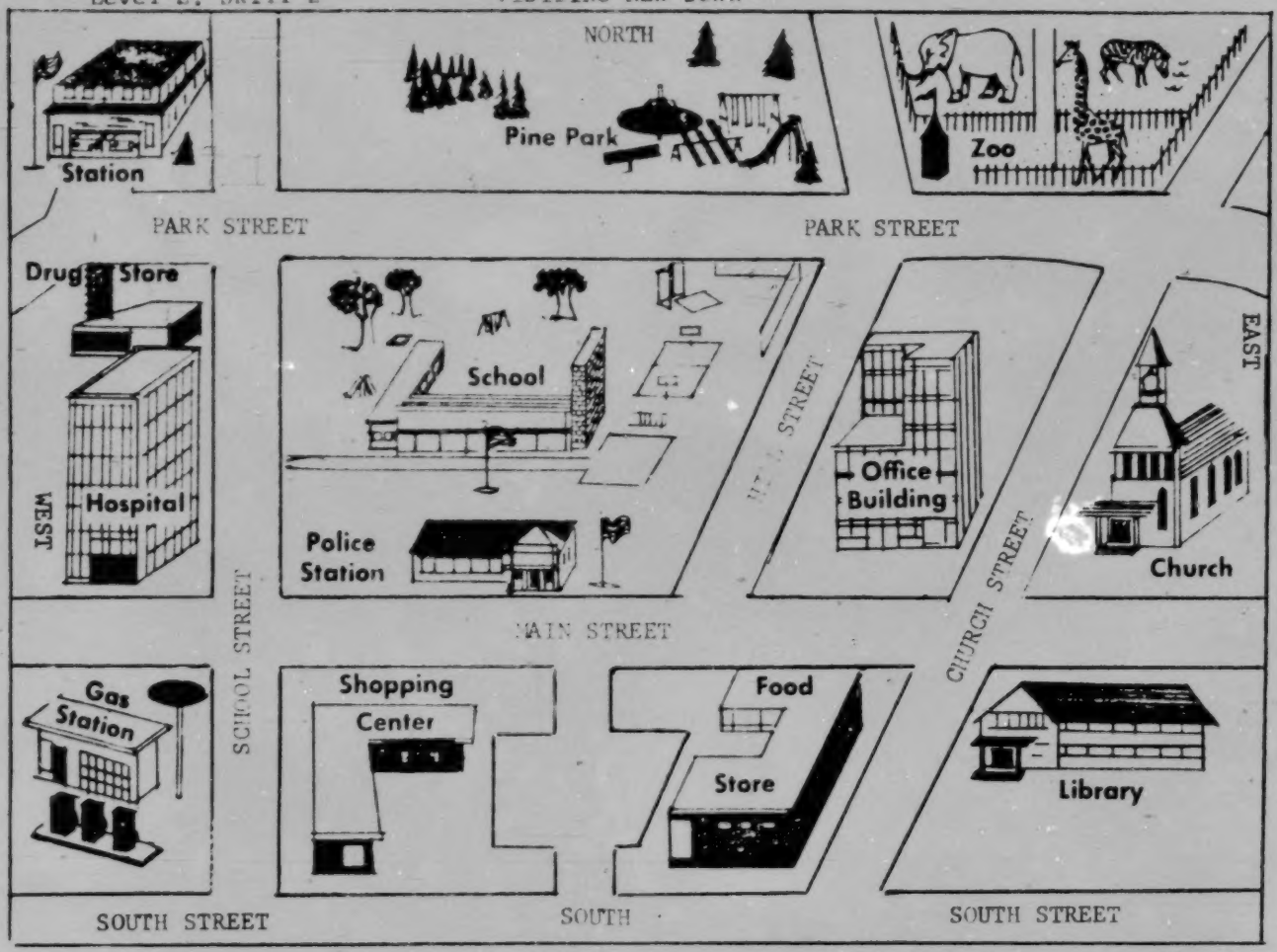
1. Driving from Diamond Lake to the park, you would use the _____ entrance.

2. Driving from Canyonville or Medford, you would use the _____ entrance.

3. Driving from Klamath Falls or Upper Klamath Lake, you could use the _____ entrance or _____ entrance.



VISITING NEW TOWN



Look at the map of New Town. How is this town different from Frontier Town? What buildings do you find in New Town, but not in Frontier Town?

Using the Map

Follow the directions in each sentence.

1. Mark the shortest way to drive from the school to the library.
2. Draw a circle around the building west of the shopping center.
3. Draw a picnic table on the western side of Pine Park.
4. Draw a small building south of the zoo.
5. Mark the shortest way to drive from the zoo to the police station.
6. Circle the name of a street that goes east and west.

Reviewing Directions

Use these words to complete the sentences below: north, south, east, west.

1. From the shopping center to the food store, you go _____.
2. The zoo is _____ of Park Street.
3. From the hospital to the gas station, you go _____.
4. The fire station is _____ of the drug store.

Worksheet
Level B, Skill 1
Level E, Skill 2

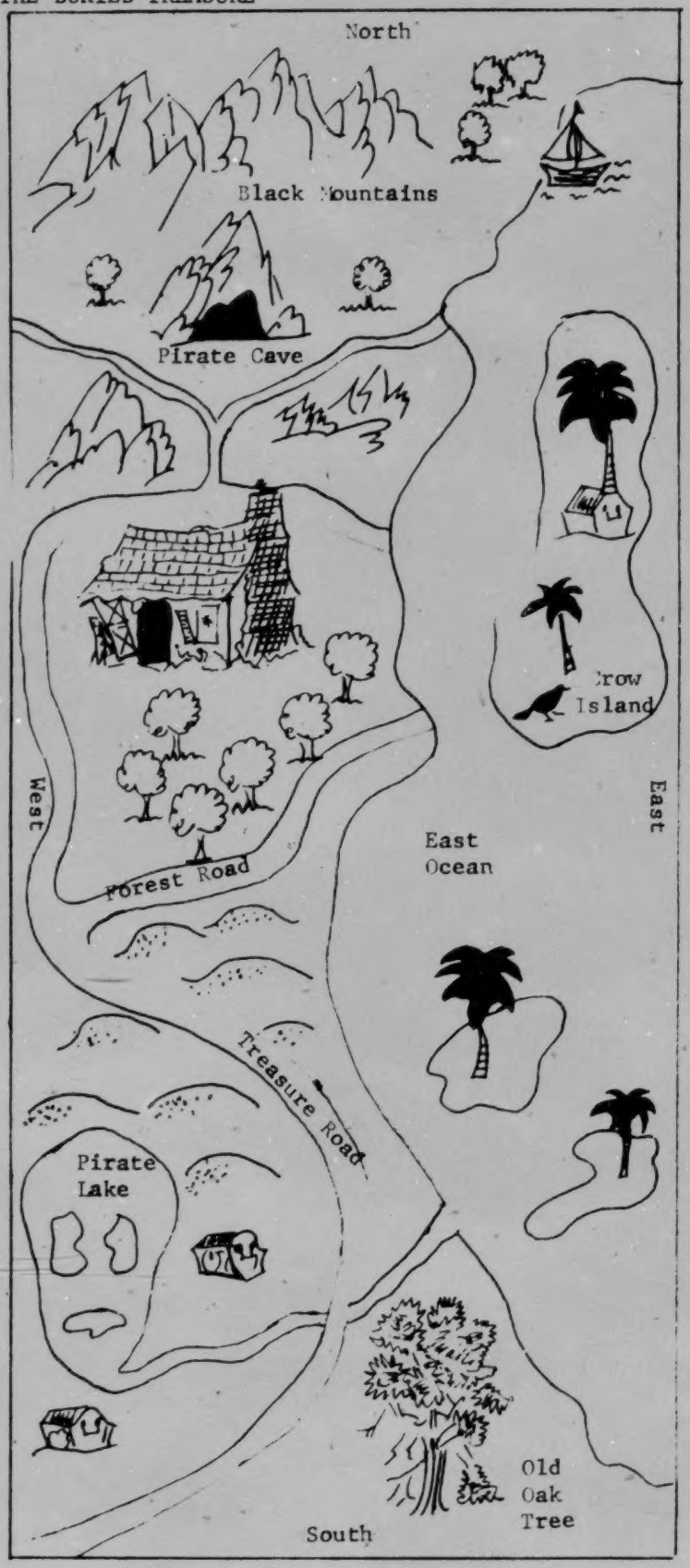
FIND THE BURIED TREASURE

Once Tommy found a note about a pirate's buried treasure. He set out to find it.

Help Tommy find the treasure by following the directions below. Draw a line to show where Tommy went. Mark an X on the map at the beginning and at the end of the line.

1. Tommy found the note in the chest south of Pirate Lake.
2. The note told him to cross the bridge and follow Treasure Road through the hills.
3. Then, he walked north to the old house. He found a new note.
4. It told him to take the path to the tree west of Pirate's Cave.
5. He went north to Black Mountains, then east to the three trees.
6. Tommy used a boat to sail south to Crow Island.
7. Under the little tree, he found the last note.
8. It told him to sail to the island closest to the Old Oak Tree.
9. The note told him to dig under the palm tree.

Tommy found a pot of gold.



SUGGESTIONS FOR MAP STUDY CENTERS

Level A, Skill 1

The primary level of map study should begin with very simple concepts. Readiness for map reading could begin with the children making a large scale map of their own school room. The room is much reduced in size without changing the shape of it.

Level B, Skill 1

These concepts are expanded when the children may go outside to make a map of their whole school. Then the size of their own classroom is reduced. Use symbols for the offices, etc.

Level D, Skill 2

The use of the compass can be introduced for the cardinal points to be placed on the map. The reason for placing "north" at the "top" should be developed.

Level C, Skill 1a

The children then may develop a large map of their school area using the streets that are in their school's area. They could place small houses on their own streets and trace their route to and from school. Map could be on floor or table. They should be able to discover the directions and relate this to the class.

From this point, symbols could be designed for their houses, libraries, parks, large stores in the community, etc., and then the map may be placed on bulletin board. This provides another experience with placing "north" at the top of the map.

Level B, Skill 2

A simple grid may be designed with yarn so there may be experiences in searching for assigned points.

Level C, Skill 2

Terminology of land and water forms may be introduced through field trips and taking pictures with Polaroid camera. Pictures from magazines may be used with the children tracing the various land and water forms without detail. This gives experiences of transferring the "real picture" to a "symbol".

Activities:

1. Make papier-maché land forms. Add water, slowly, to show flow of the rivers, collection basins for lakes, etc.

2. Make papier-maché globe, placing it over an inflated balloon. Paint blue and add continents.

3. Modeling clay may be used to shape the land forms.

4. Read story which requires movement from place to place. Trace on a map or flannel board map.

5. Invite postman to class to describe his route.

6. Make a chart or glossary of land and water forms defining, depicting and illustrating each term.

7. Large map for neighborhood.

MAP SKILLS FOR INTERMEDIATE GRADES (4-6)

The materials in this unit were designed for use in a skills center. Most can be used equally as well for large or small group activities.

Name _____ 34

Map Skills Contract

1
Your Environment
- O construction
- O legend ditto
- O map

2
O What is a map?

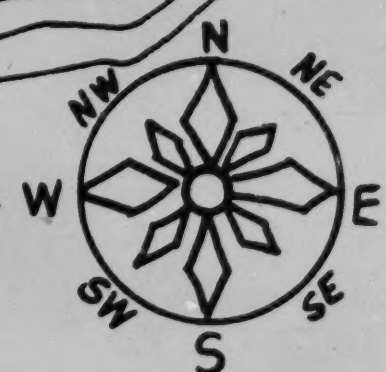
O Elements of a map

O Treasure Hunt

3
Activities
Worksheets OOOOO
mapping games
- O _____
- O _____
- O _____

add a symbol O
symbol card O

4
Test Yourself
- O Treasure Island
- O Electric Board
- O Vocabulary Wheel



TITLE: Introductory Motivational Map Lesson

OBJECTIVES: 1) Study Skills, Level C, 1a
2) To show the need for legends and symbols, directionality, and scale.

MATERIALS: 8½x11 newsprint, opaque projector (optical)

DIRECTIONS: Each child draws a map of the classroom and marks his desk with an X. (He does not put his name on his paper.) All the maps are put in a pile. Someone shuffles the maps and hands them out at random to the students. Everyone tries to read the map he gets and sits at the desk where he thinks X is. He then checks to find out whether the person whose desk he is sitting at is the map maker.

"This map doesn't make sense. You can't tell where the front of the room is."

He says that this rectangle is supposed to be the blackboard, but it looks like the teacher's desk."

"He sort of got the whole room upside down and backwards. I sat exactly opposite where I was supposed to sit."

Looking at a few maps on the opaque or overhead projector may prove helpful.

When you look down on things, what do they look like? What do you see?

Do they look the same as when you look from the side?

What would this table look like if you looked at it from the ceiling?

What would a tree or the school building look like from the sky?

How can you tell how to hold this map?

Which side of the room is left? Which is right?

Does it matter which way you are facing?

TITLE: Your Environment, Part I

OBJECTIVES: Level A, Skill 1--Arranges models

MATERIALS: Cardboard, construction paper, boxes (small sizes), toothpicks, string, etc.

DIRECTIONS: After completing the introductory motivational map lesson, the student is ready to begin working on the first activity on the contract--"Your Environment." On a piece of cardboard (desk size or smaller), each student is asked to construct a three-dimensional environmental model from the ground up. Possible environmental choices might include a playground, a bedroom, the school cafeteria, or a park. Construction materials might include pipe cleaners, toothpicks, match boxes, scraps of materials, string, etc/

Upon completion of their projects, the students can display their models in the classroom.

TITLE: Your Environment, Part II

OBJECTIVES: Level B, Skill 1a--Uses picture symbols to interpret maps
Level C, Skill 1a

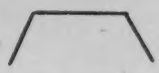
MATERIALS: Model constructed in "Your Environment, Part 1".
Worksheet "Making a Legend for My Environmental Model"
Teacher Resource File: Level C-1, Worksheets 1-3

DIRECTIONS: The teacher should at this time use the Wisconsin Study Skills Kit to introduce the concept and skills involved in making and reading a legend. The worksheet and transparencies appropriate are found in the folder entitled Level C-1. Worksheets 1-3 can be made into transparencies and done with the entire group.

The student is now ready to do the second activity on the contract--making a legend for his environmental model. He may use the legend ditto to make this task easier. The last task on the first island of the contract is to make a map of his environmental model that uses the symbols in his legend. For this activity it might be helpful if students put their models on the floor and looked down on them for a bird's eye view. It might also be helpful if they folded their map paper into fourths creating a quadrant. This same effect could be duplicated on their models by laying a piece of yarn across the middle horizontally and vertically.

MAKING A LEGEND FOR MY ENVIRONMENTAL MODEL

Name _____

OBJECT	PICTURE	SYMBOL
Swing		

AUDIO VISUAL CENTER

The following instructional materials were used successfully in an A/V center.

I. Maps and How to Use Them, Eye Gate House, Inc., Jamaica, NY 11435
(Available in many of the schools and from the ESC)

What is a Map (Tape and Filmstrip)
Elements of a Map (Tape and Filmstrip)

II. Wollensak Teaching Tapes

The Treasure Hunt (Tape and Worksheets)
(Available from the ESC or for tape duplication)

III. Any other appropriate material that your school might have.

ACTIVITY CENTER

OBJECTIVES: To provide practice in applying the following skills: Level B, Skill 1a and Level C, Skill 1a.

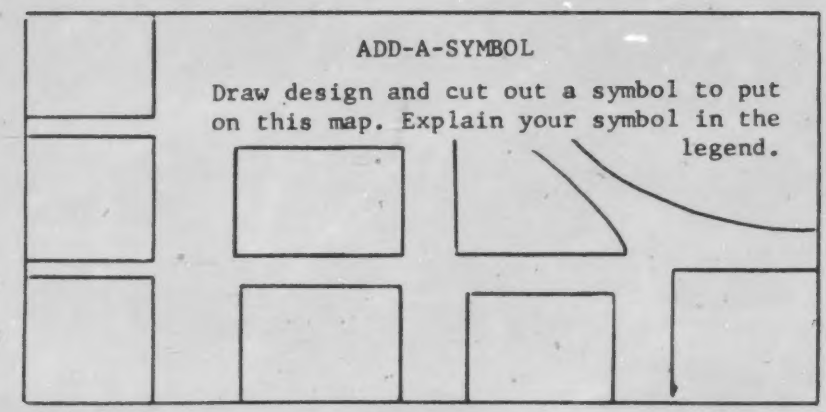
MATERIALS: Worksheets, "Around the World Race" game, symbol cards, "Add-A-Symbol" game

Worksheets: A sampling of possible worksheets is included. Worksheets 4, 5 and 6 from Level C-1 of the Wisconsin Study Skills Kit are also appropriate at this time and may be used independently or as a group.

Mapping Games: A sampling of mapping games from the ESS unit entitled "Class Kit for Mapping" is included. These instructions for games could be mounted and laminated and used as task cards at Station 3.

A game entitled "Around the World Race" from the Arrow Atlas Kit from Scholastic Magazines is also included. The teacher would need to provide a large world map for this game, but a diagram for the game on that map is pictured. Also the game cards and pieces are provided in this packet.

DIRECTIONS: Organize games and activities in "Add-A-Symbol" center. Use visagraphs for worksheets.



Symbol Cards: Children cut pictures of houses, stores, mountains, rivers, and other items that could be suggested by a teacher and/or student-made list. These pictures can be cut from travel magazines like Sunset. Students mount pictures on index cards and use the reverse side to draw a non-pictorial symbol for the picture.

Worksheet
Activity Center--Level C, Skill 1a

MAKE YOUR OWN CITY. YOU MAY WISH TO INCLUDE:

rivers
railroad tracks
airports
freeways
hills
parks
shopping malls

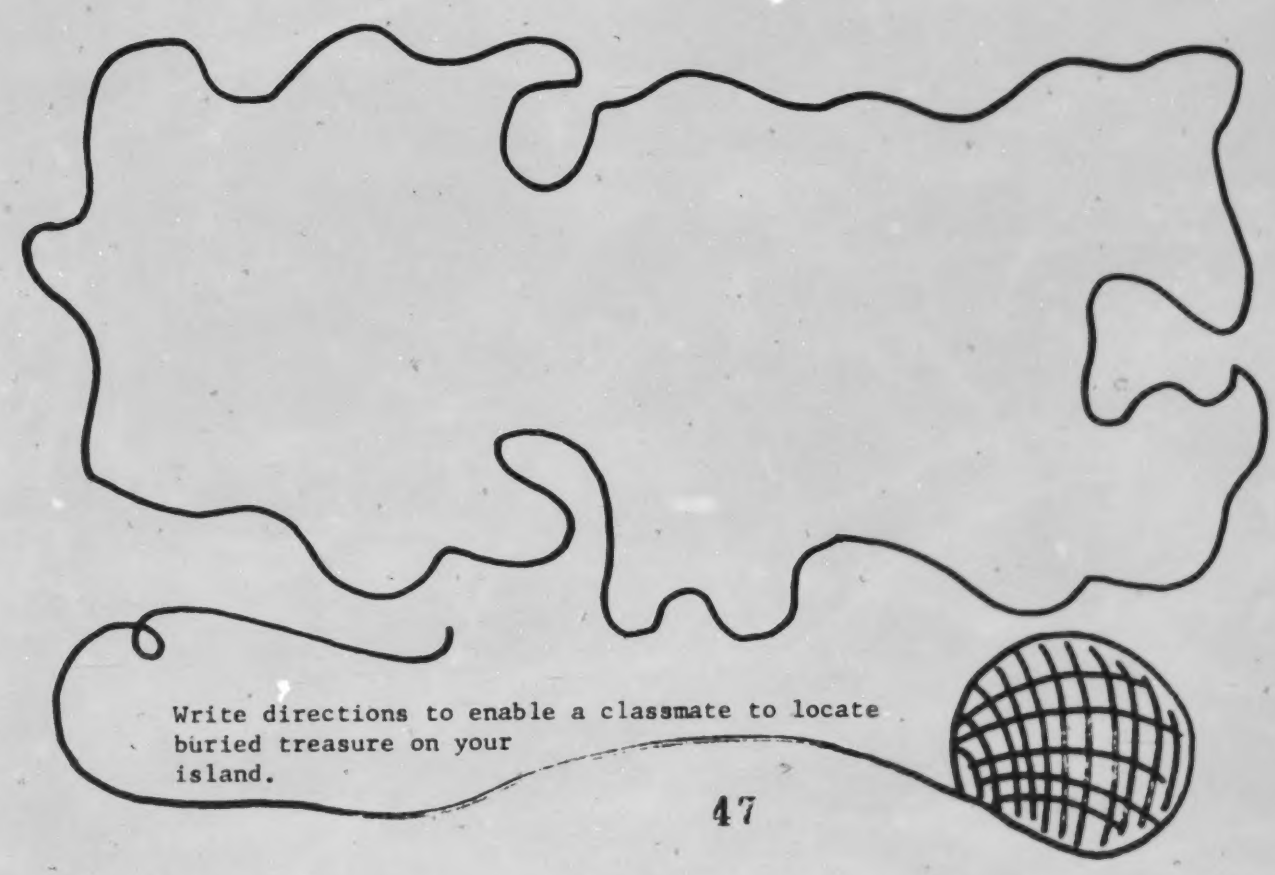
WRITE A LEGEND FOR YOUR SYMBOLS.

Worksheet
Level E, Skill 2

PEABODY PIRATES

Following all the directions below, make a map of the island.

1. Put a direction indicator in the top right hand corner.
2. A forest of fruit trees is in the northwest corner of the island.
3. Pine trees grow on the eastern end of the island.
4. Mountains are found in the middle of the island.
5. Flowing east from the mountains is a river; it forms a lake near the northeast coast.
6. The southwest corner of the island contains a swamp; there are many low grasses around it.
7. Make a good place to harbor your ship. Label it.
8. As a pirate, where would you live? Mark it on the map.

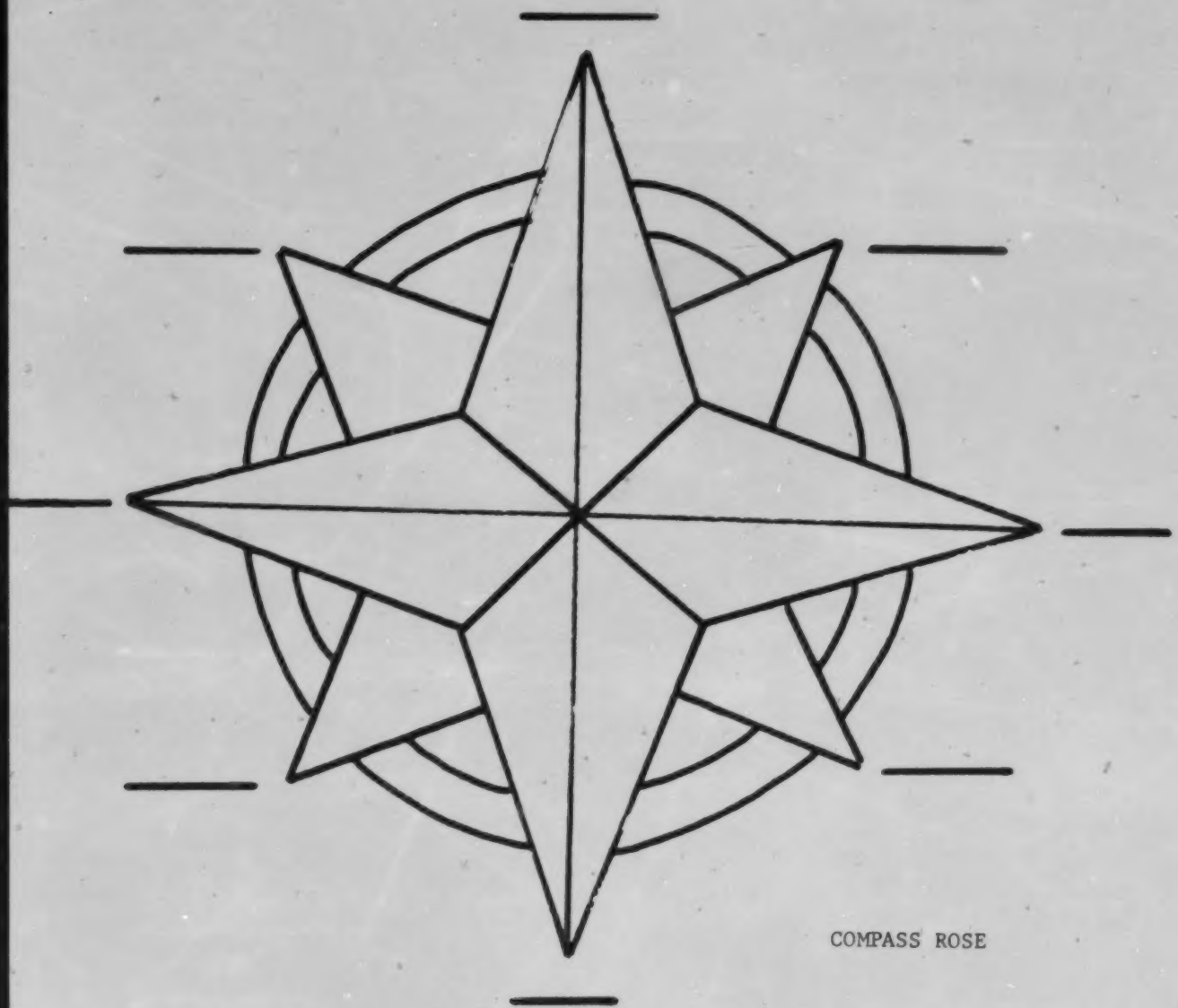


Write directions to enable a classmate to locate buried treasure on your island.

Worksheet
Level E, Skill 2

COMPASS DIRECTIONS

N is a short way to write North. Opposite N is S.
S stands for _____
W stands for _____
E stands for _____

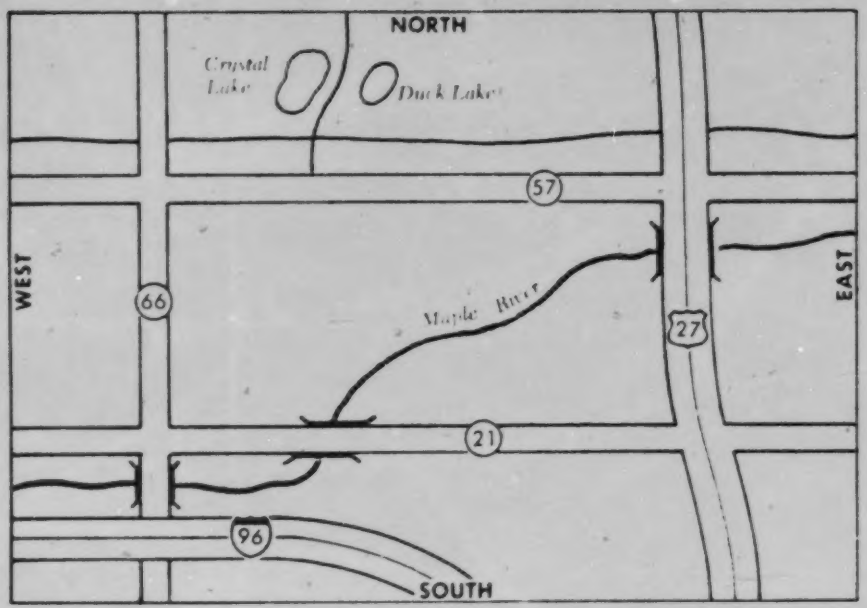


COMPASS ROSE

SW stands for _____
NW stands for _____
SE stands for _____
NE stands for _____

Worksheet
Level D, Skill 1

MAP SYMBOLS



How many kinds of highway markers can you find?

Highway signs and markers tell the different kinds of highways.

HIGHWAY MARKERS

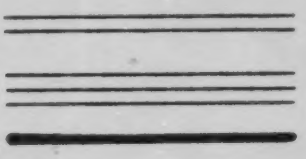
interstate U.S. state

HIGHWAY SYMBOLS

highway

divided highway

secondary road



KINDS OF HIGHWAYS

There are different kinds of roads and highways that connect towns and cities. There are interstate highways, U.S. highways, and state highways. The kind of highway is shown by the shape of its sign or marker. Each highway has a route number. Secondary roads are smaller than highways. Not all secondary roads have route numbers.

REVIEW--WATER SYMBOLS

Water is often shown in blue on maps. Circle each word that names something which would be shown in blue on a map.

highway	lake
mountains	bridge
river	ocean
creek	pond

USING THE MAP

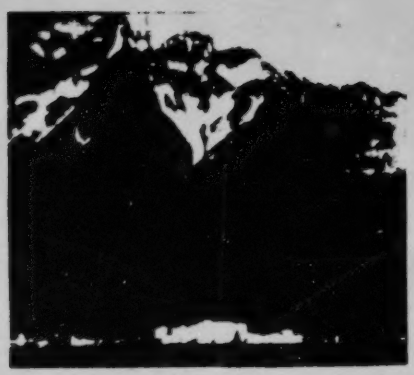
Underline each group of words that could correctly complete the sentence.

The map shows that.....

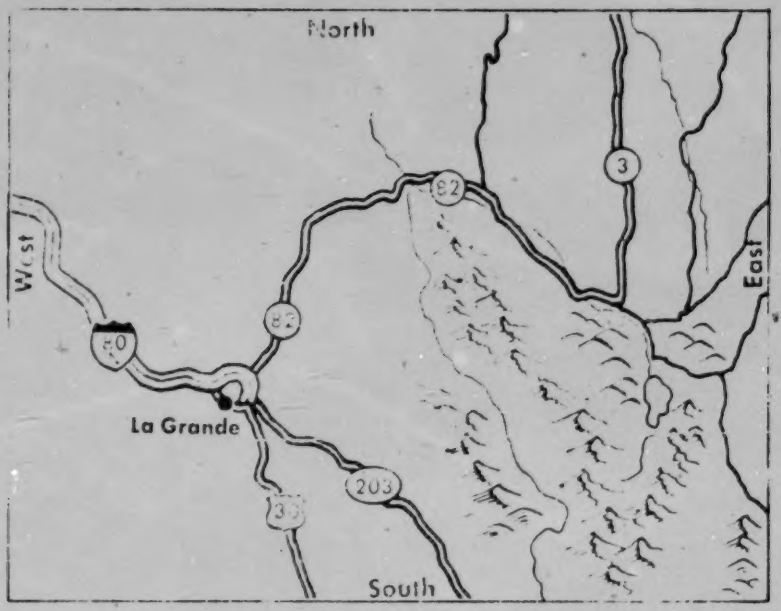
1. you could go north on Route 27
2. many buildings are near Duck Lake
3. Route 57 goes north and south
4. Route 21 crosses Maple River
5. Crystal Lake is south of Route 21
6. Secondary roads go hear the lakes
7. Route 96 is wider than Route 21
8. Routes 57 and 21 go east and west

Worksheet
Level C, Skill 1a
Level D, Skill 2

MAP SYMBOLS

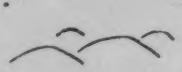


This photo shows mountains, hills, and a lake. The mountains are high with steep sides. The hills are lower, smoother, and less steep. There are roads in the picture, too, but they are hard to see.



This map shows the place shown in the photo. Find the lake. Can you see where the roads are? Can you tell why they are curved?

Mountain and hill symbols are shown in different ways.

Hills may be shown by  or

Mountains may be shown by or

MAP READING

Circle the things which you can find on this map.

trees	secondary roads
mountains	bridges
route numbers	buildings
directions	lake
rivers	divided highway
railroads	hills
U.S. highway	interstate highway

DIRECTIONS

Complete each sentence by filling in a word from this list: north, south, east, west, eastern, western.

1. State Route 3 runs _____ and _____.
2. The lake is _____ of Route 3.
3. There are no rivers in the _____ of the map.
4. La Grande is _____ of the lake.
5. Interstate Route 80N is _____ of the mountains.
6. Route 203 is _____ of Route 30.

Worksheet
Level D, Skill 2

MAP SYMBOLS

Reviewing Map Symbols: On Map 1 find each map symbol listed below. Study each symbol carefully.

A. a state boundary
B. a state capital
C. a bay
D. mountains
E. a lake
F. a river
G. an airport
H. a railroad
I. part of a coastline
J. a city that is not a state capital

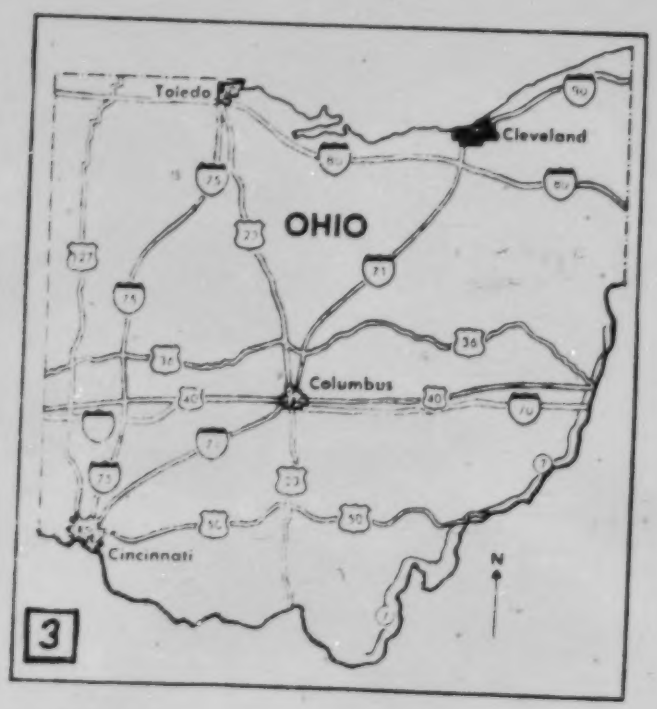
Finding Map Symbols: On Map 2 find each map symbol listed below. Write the letter of the symbol on the line.

_____ a lake
_____ a railroad
_____ a bay
_____ a river
_____ an airport
_____ a state capital
_____ mountains
_____ a state boundary
_____ part of a coastline
_____ a city that is not a state capital

Route markers with different shapes are used to show main or primary roads on maps. Secondary roads are shown by black lines.

Highways: Study Map 3. Then complete the sentences below.

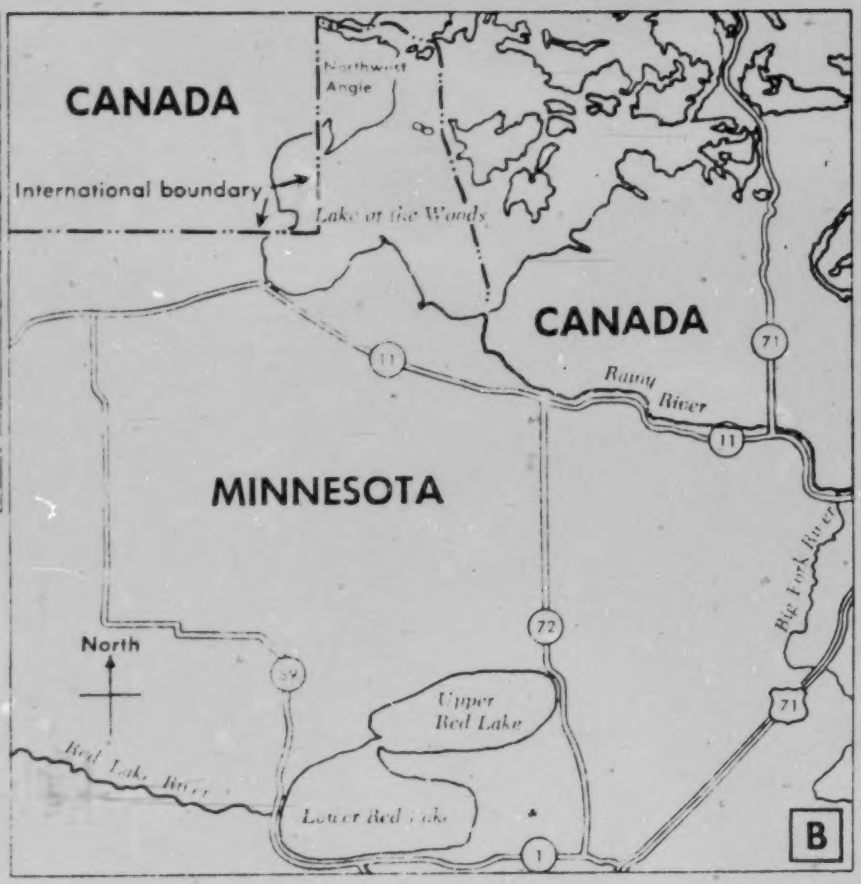
1. A north-south state route is _____.
2. East-west U.S. routes are _____.
3. The interstate highway connecting Toledo and Cincinnati is Route _____.
4. Interstate 41 connects Columbus with _____ and _____.



Worksheet
Level D, Skill 2

MAP SYMBOLS

The boundary where two countries meet is called an international boundary. This map shows a section of the boundary between the United States and Canada. The international boundary is shown by both a symbol and a river.



Locate the Northwest Angle and the three U.S. islands. This part of Minnesota was once the northernmost part of the United States. Now, Alaska is the northernmost part of the United States.

Map Reading

Read both maps. Then underline each true sentence.

1. Minnesota has an international boundary.
2. Upper Red Lake is farther west than Lower Red Lake.
3. The largest islands in Lake of the Woods belong to Canada.
4. Minnesota has water boundaries.
5. Iowa is south of Minnesota.
6. Northwest Angle is the northernmost part of the United States.
7. Route 11 runs mainly east and west.

Use Map B to help you complete the list below.

1. Name three lakes: _____

   _____ _____

2. Name three rivers: _____

   _____ _____

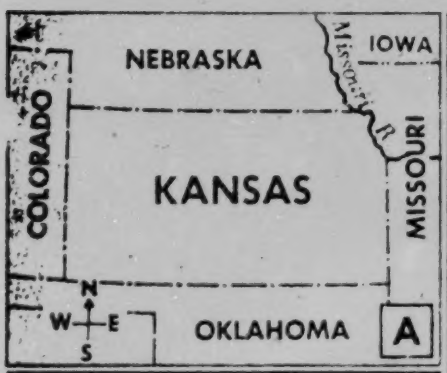
3. Name one U.S. highway: _____
4. Name four state routes: _____

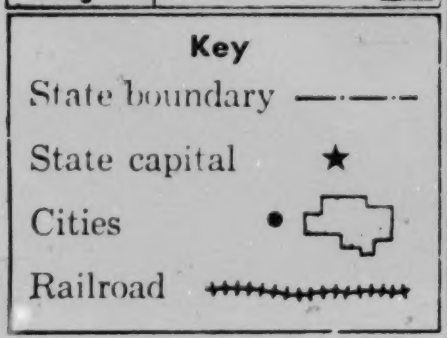
   _____ _____ _____

5. Name one Canadian highway: _____

Worksheet
Level C, Skill 1a
Level D, Skill 2

MAP SYMBOLS





Boundaries: The lines that divide counties, states, or countries on maps are called boundaries. Sometimes, a river may form a boundary.

Cities: Symbols help show the size of cities. Shaded areas show the size and shape of large cities. Symbols show state and national capitals.

Using the Maps: Underline the group of words that best completes each sentence.

1. The Missouri River forms part of the boundary between.....
   Kansas and Nebraska Colorado and Oklahoma Missouri and Kansas

2. Topeka is a .....
   state boundary of Nebraska state capital of Missouri
   city larger than Holton

3. Kansas City, Kansas, is .....
   smaller than Frankfort, Kansas near a state boundary far from the railroad

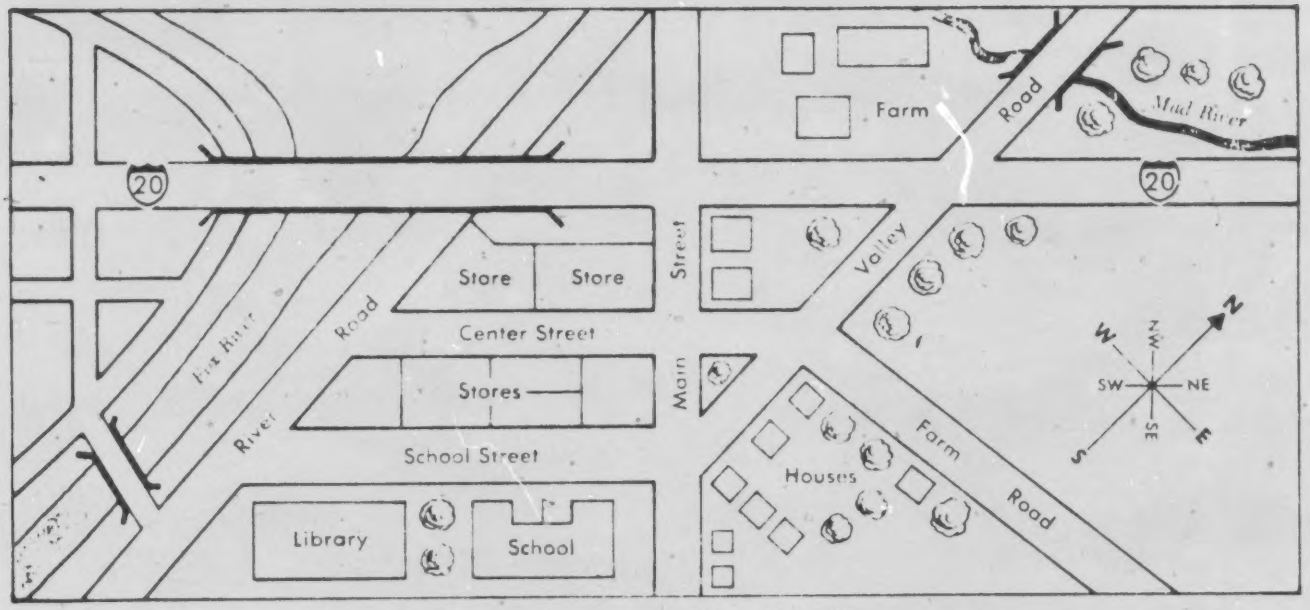
4. The states which border Kansas on the north and west are .....
   Oklahoma and Colorado Colorado and Nebraska Oklahoma and Missouri

Write the letter of the map, A or B, you would use to answer these questions:

____ 1. What is the capital of Kansas?
____ 2. Does the railroad pass through Blue Rapids, Kansas?
____ 3. Does a river form the boundary between Oklahoma and Kansas?
____ 4. In what direction would you travel from Holton To Topeka?
____ 5. What state is south of Kansas?

Worksheet
Level C, Skill 1a
Level D, Skill 2

IN FOX VALLEY



Using Map Symbols: Circle the word, or group of words, that best completes each sentence.

1. Route 20 is _____ highway.
   an interstate a U.S. a state
2. The bridges on this map cross _____.
   rivers and creeks rivers and roads
   rivers and railroads
3. The school is _____.
   near the library on Route 20
   near the farm

Map Reading: Underline the sentences that tell things you can learn from the map.

1. People shop more on Center Street than on Farm Road.
2. The school is near a pond.
3. Fox River is wider than Mad River.
4. The farm is closer to the library than to the stores.
5. Valley Road goes by a farm.

New Directions: Between the four main directions are other directions. Halfway between north and east is northeast (NE). Halfway between south and west is southwest (SW). The other "in-between" directions are southeast (SE) and northwest (NW).

Find north on the map. Put N and S on the ends of a north-south road. Put E and W on an east-west road. Watch! This map is tricky.

Complete the sentences below, using words from this list: northeast, southwest, northwest, southeast.

1. Route 20 runs in a southwest and _____ direction.
2. If you walk toward the river on Center Street, you go _____.
3. Going toward Route 20 on Main Street, you travel _____.

Activity
Level D, Skill 2

TITLE: Find Tommy's Lost Dog

OBJECTIVES: Level D, Skill 2

MATERIALS: Railroad board, pens, acetate cover (or laminate)

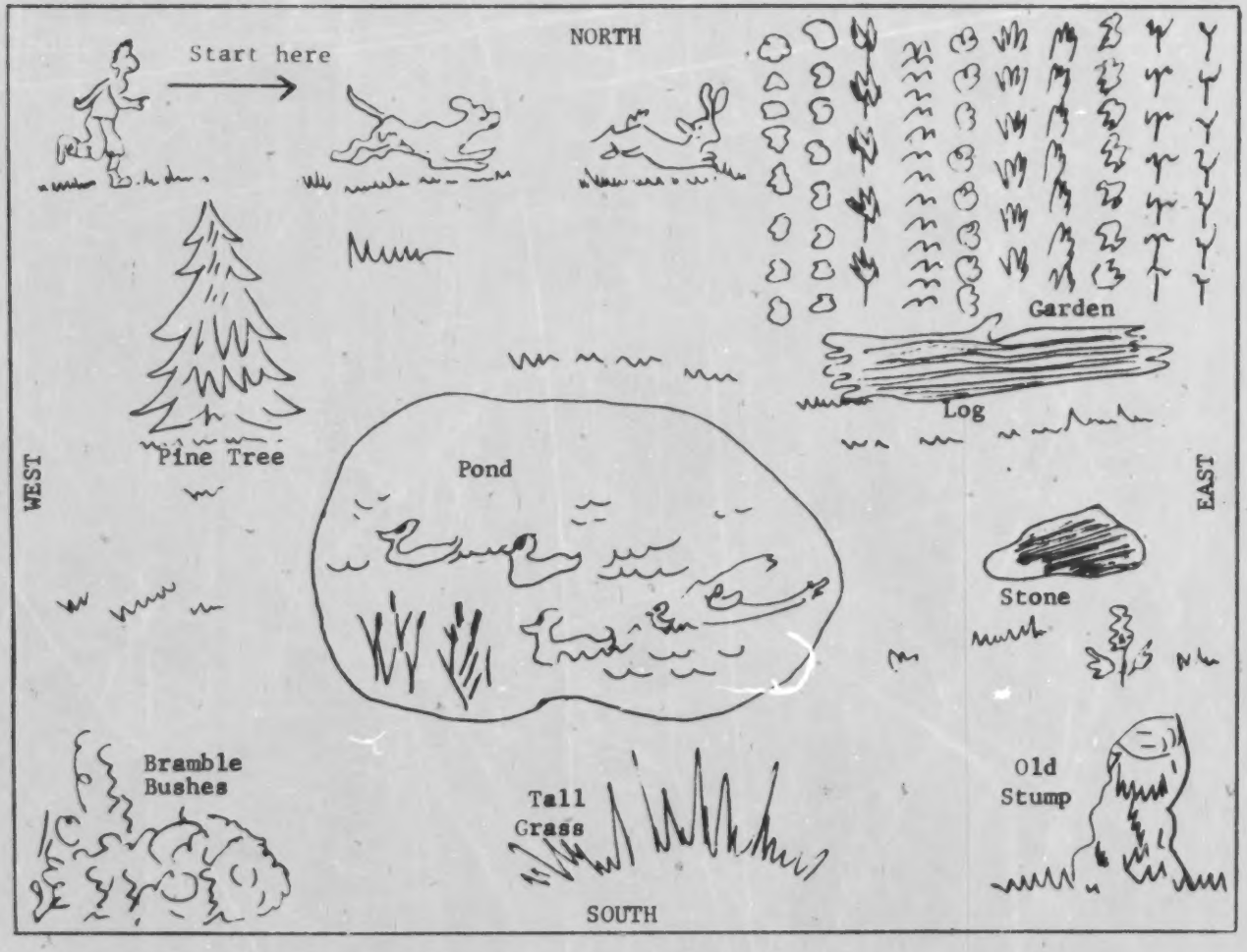
DIRECTIONS: Cut railroad board in half. Print the following directions on the back of the game.

Finding Directions: Face north. South is behind you. East is to your right ——→. West is to your left ←——. Look at the map of the field below. The directions north, south, east, and west are marked on the map. Use these directions to find Tommy's dog.

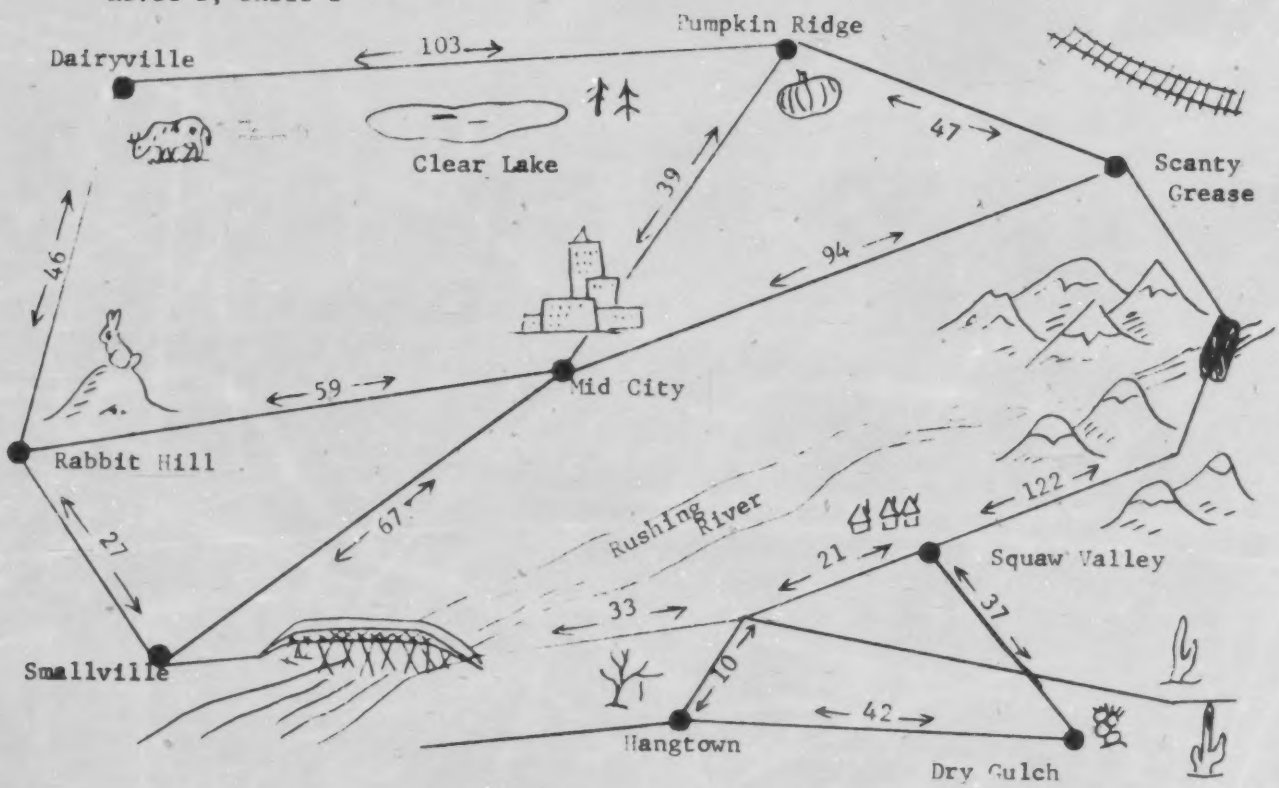
Once, Tommy's dog chased a rabbit. Tommy ran after his dog. Draw a line to show where Tommy's dog and the rabbit went. The directions in the sentences tell you where to draw your lines.

1. The dog chased the rabbit EAST into the garden.
2. The rabbit hopped SOUTH to the log.
3. The dog chased the rabbit WEST to the pine tree.
4. The rabbit ran SOUTH to the bushes.
5. The dog followed the rabbit EAST to the tall grass.
6. The rabbit hopped NORTH to the pond.
7. The dog chased the rabbit EAST to the stone.
8. The rabbit ran SOUTH to the stump and popped down a hole.
9. The dog ran to the stump, then WEST to the tall grass to meet Tommy.

Gameboard Pattern



Activity
Level D, Skill 1



TITLE: Highways and Byways

OBJECTIVE: Level D, Skill 1

MATERIALS, Railroad board (½ size), pens

DIRECTIONS: Make gameboard. Duplicate worksheets and store with gameboard.

Look at Highways and Byways and tell how many miles it is from:

1. Mid City to Dairyville by way of Rabbit Hill _____
2. Rabbit Hill to Scanty Grease by the most direct route _____
3. Pumpkin Ridge, past the railroad, to Dry Gulch _____
4. Smallville to Pumpkin Ridge, crossing over both bridges _____
5. Hangtown to Mid City, going the shortest route _____
6. Dairyville to Dry Gulch, driving through the mountains _____
7. Squaw Valley to Pumpkin Ridge, going by way of Scanty Grease, stopping off at Mid City to shop. _____
8. Dry Gulch to Rabbit Hill, buying some gas at Hangtown _____
9. Mid City to Squaw Valley, going the shortest way _____
10. Scanty Grease to Rabbit Hill, picnicing at Clear Lake on the way _____

CLASS KIT FOR MAPPING

Samples of mapping games from the ESS kit entitled "Class Kit for Mapping" are included. These sheets and others from the kit could be placed in visographs and used in Station 3.

Many schools have "Class Kit for Mapping" in the school. If you do not have this ESS kit in your school, you may borrow it from the ESC.

Request EA 1451 "Class Kit for Mapping" from the ESC.

mapping game 2

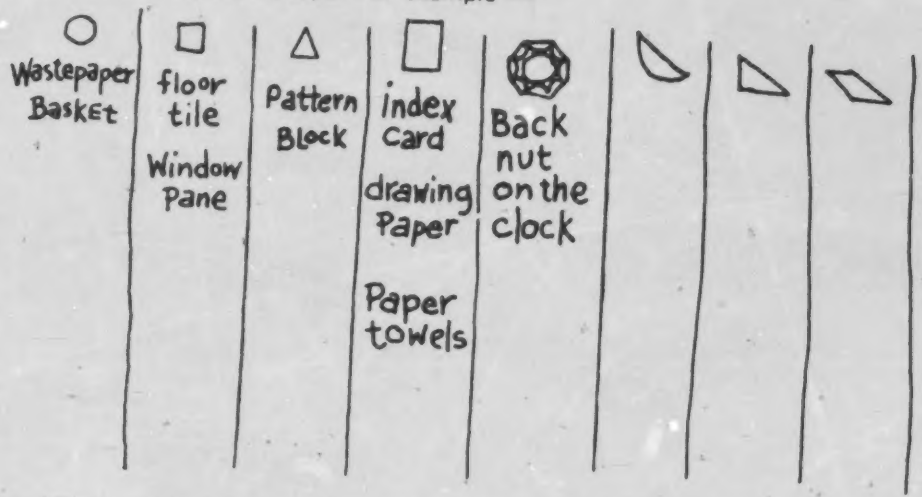
finding shapes

(2 people, up to the whole class)

You need

Paper and pencil

Draw some columns on your paper. At the top of each column, draw a different shape. For example —



List any objects you can find that have the same shape as the drawings.

Compare your list with the lists others in your group have made.

Which shapes have the longest lists under them?

Which have the shortest?

Another game —

Look at something complicated — a bicycle, a bridge, a bulletin board. How many different shapes can you find in it?

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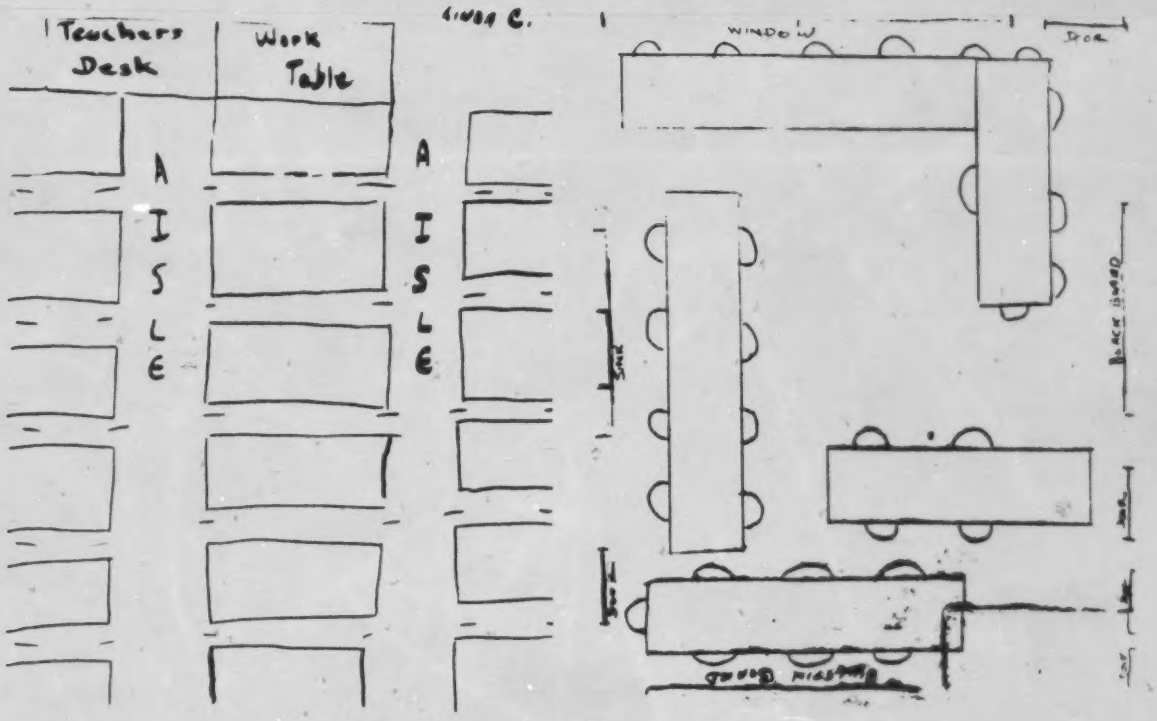
mapping game 10

mapping the room

(1 or 2 people, up to the whole class)

You need

drawing materials



These pictures show some maps that other students have made of their classrooms.

Can you imagine what these classrooms look like? Are there things you would like to know that you can't find out from the maps?

Make a map of your classroom. You'll have to decide where things go, how big things should be, where you'll stand when you draw the map, and other things, such as whether or not to show the lights on the ceiling.

When you've finished, see if you can use your map to help someone else find an object in the room.

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mapping game 18

making picture sentences and using codes

(1 person)

eye can Knot read this cent tents.

KEY

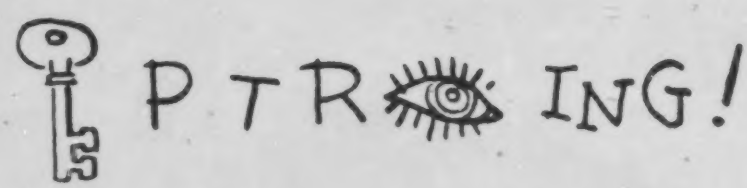
a = 1
b = 2
c = 3
d = 4
e = 5
f = 6
g = 7
h = 8
i = 9
j = 10
k = 11
l = 12
m = 13
n = 14
o = 15
p = 16
q = 17
r = 18
s = 19
t = 20
u = 21
v = 22
w = 23
x = 24
y = 25
z = 26

Using the key, decode the following:

3 1(14) (25)(15)(21) (13)1(11)5

(21)(16) (19)(15)(13)5 3(15)4 5(19)

(15)6 (25)(15)(21)(18) (15)(23)(14)?



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TESTING STATION

The following are suggestions for testing skills learned. If you have not used the Wisconsin pre-test, include one here for practice.

1. Treasure Island--a copy of the ditto and map is included. To make this activity self-checking, use AB Dick latent image ditto and latent image developer.

2. Electric Response Board--directions for making this teaching machine are included. Two possible programs for use on the board are also included.

3. Vocabulary Wheel--possibly terminology to be developed:

   area
   surface layer
   symbol
   legend
   atlas
   cartographer
   directions: north, south, east, west, NE, SW, NW, SE
   map
   globe
   model
   key
   scale
   compass rose
   route
   interstate highway
   boundary
   capital
   coastline
   secondary road
   international boundary

Check Sheet
Level G, Skill 2

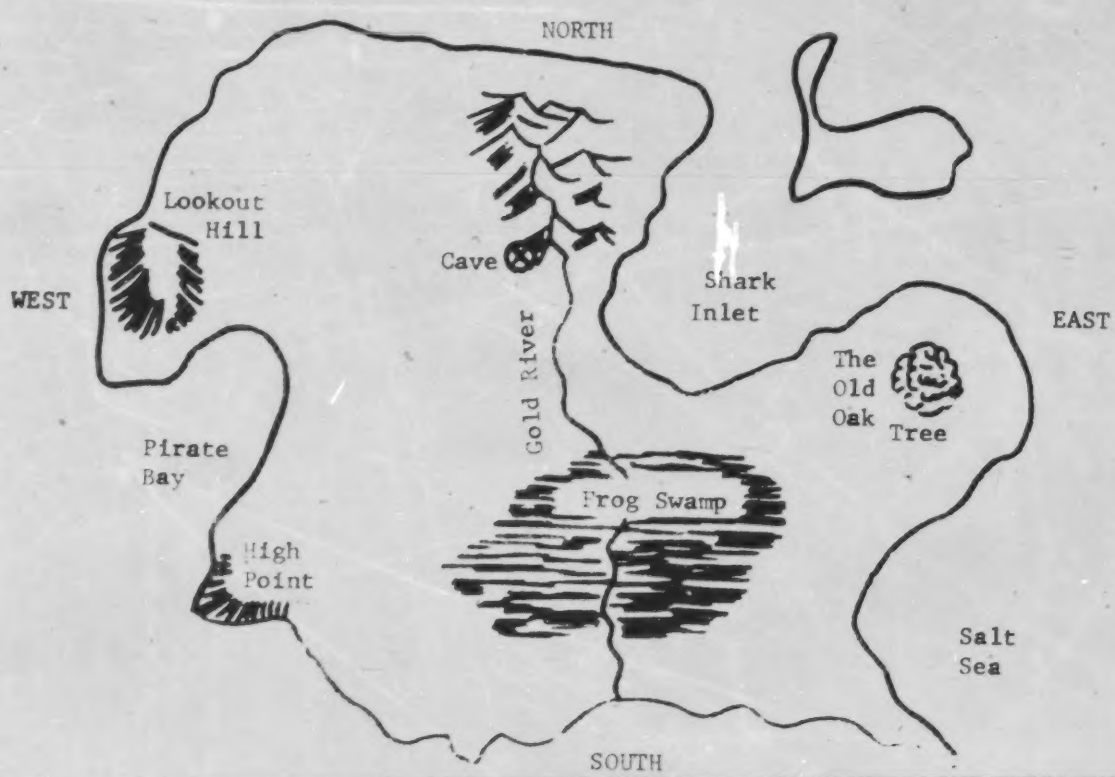
EXPLORE TREASURE ISLAND

Look at the map of Treasure Island. Circle the word that belongs in each sentence below.

1. The Old Oak Tree is on the (west, north, east) side of the island.
2. Frog Swamp is on the (north, west, south) part of the island.
3. Pirate Bay is on the (west, north, south) side of the island.
4. Shark Inlet is on the (southeast, northwest, northeast) side of Treasure Island.
5. To walk from High Point to the cave, you would go (northeast, west, northwest).
6. Lookout Hill is (northeast, west, northwest) of Frog Swamp.
7. The Gold River flows into the sea on the (north, west, south) side of the island.

Write T before each true sentence.

8. High Point is near Pirate Bay.
9. Lookout Hill is near Shark Inlet.
10. Gold River flows downstream from the mountain.
11. Pirate Bay is closer to Old Oak Tree than to Lookout Hill.
12. Frog Swamp covers a smaller area than High Point.



ELECTRIC RESPONSE BOARD

The electric response board can be used for pre- or post-testing or for part of the learning activity. It provides immediate feedback and is highly motivational.

Sample Board

Complete instruction for the construction of an electric response board follow.

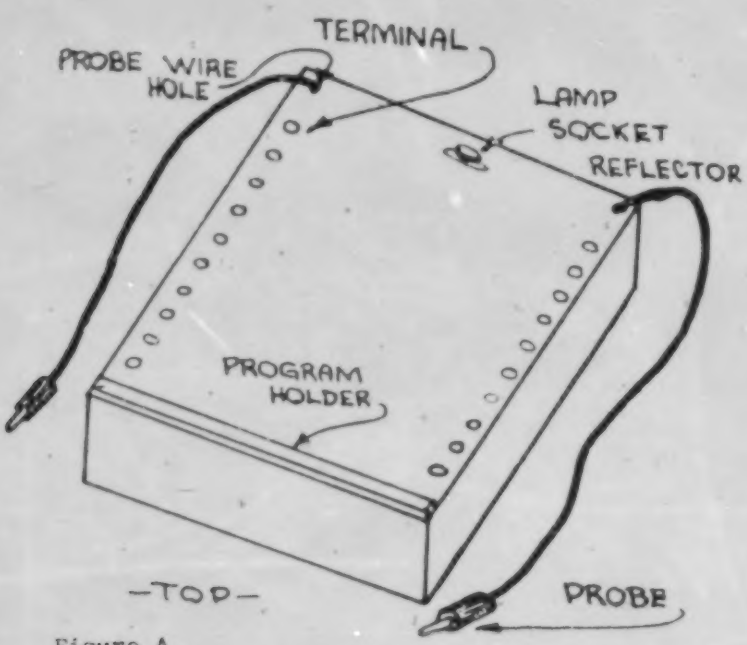


Figure A

Materials

Except for the paper fasteners and box, all parts listed here, or similar parts, are available from an electronic supply house.

- Probe Wires: Two pieces of Number 18 plastic-coated stranded copper wire. Each piece should be two feet long.
- Program Wire: Alligator clip leads. One package of ten leads.
- Lamp, Socket, Reflector: 6-volt (Calectro E2-412).
- Cells: 4 each, 1.5 volt each, size AA.
- Cell Holder: Holds all 4 cells (Calectro F3-059).
- Cell Connector: Midland Number 25-826.
- Probes: Banana Plug, 2 each.
- Paper Fasteners: 20, one-half inch long.
- Box

Figure B on the right shows the basic electric board parts: (1) battery; (2) lamp; (3) and (4) probes. In order to light the lamp, there must be a complete circuit. The circuit is complete when probe (3) touches probe (4). The lower part of Figure B shows a program card with two questions and two answers. On either side of the program card are terminals. On the underside are two program wires (represented by broken lines). Each program wire is attached one end to a question and the other end to the corresponding answer. When probe (4) touches the question terminal and probe (3) touches the correct answer terminal, the circuit will be complete. The lamp will light to indicate a correct answer. Only two questions and answers are shown here, but you can have as many as you want. Ten questions and answers spaced one inch apart work well when standard size 8½" x 11" paper for programs is used.

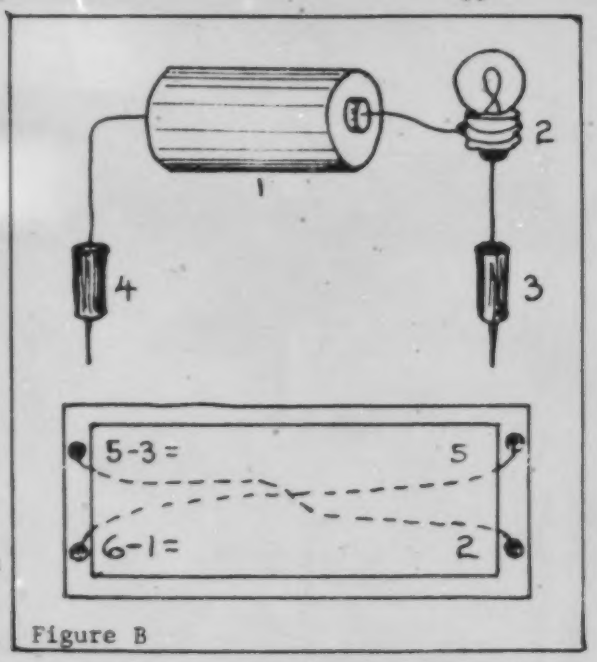


Figure B

Construction

Having selected a box for your response board, decide on the size of your program board. 8½" x 11" is a standard paper size and is recommended. The example shown in Figure A is designed for an 8½" x 11" program board. Make all necessary holes in the box. The figure has 10 terminals (paper fasteners) placed 1" apart on each side of the front of the box. The program is placed between the terminals. The lamp, socket and reflector are placed in the top center of the front of the box. Probe holes are placed in the two top front corners of the box. Attach the paper fasteners. Figure G shows a paper fastener with alligator clip attached. Install the reflector and the lamp (Figure D). Cut 2 pieces of Number 18 plastic-coated stranded copper wire. Using a knife, strip ½" of plastic coating off both ends of each wire (Figure E). Tie a knot 3" from one end of each wire and thread the wire through the probe hole so that the 3" piece and the knot are on the inside (Figure F). The knot is to prevent the wire from being pulled loose. Wire the circuit. Attack one of the probe wires to one of the cell connector wires (Figure C). Attach the other probe wire to one of the lamp connectors. Attack the other cell connector wire to the other lamp connector. Solder the wire connections for best results, or rightly twist wires.

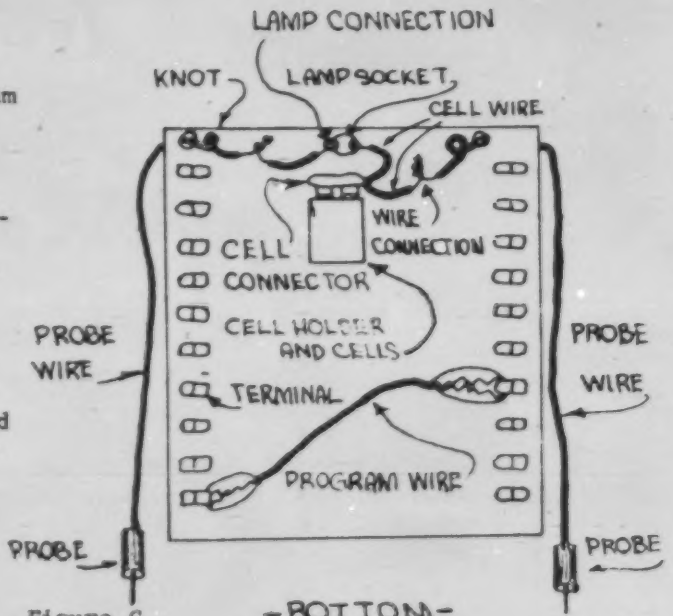


Figure C

Program the board by attaching one end of one clip lead to a question terminal on the left side of the board and the respective answer on the right side of the board (Figure C). Attach all the clip leads in this way. Reprogram the circuit as necessary (Figure G). Connect the cell connector to the cell holder. Glue the holder to the box. The cell connector comes with wires attached. Attach probes (Figure H). Slip the plastic cap over the wire, stick the bare wire into the open bottom of the threaded part of the probe and out the top part of the probe. Twist the wire to the right so that the pressure from the screwed-on plastic cap will hold it in place (Figure H). Screw on the cap. Your electric response board is now complete. Touch the metal portion of the probes together; the lamp should glow. If the lamp does not glow, check to be sure your circuit is wired as shown in Figure C, or check to be sure the lamp is tight in the socket. Check all the wire connections.

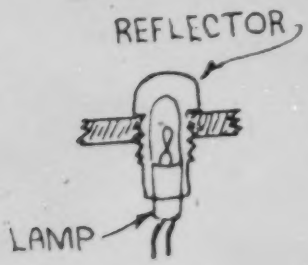


Figure D

Figure E

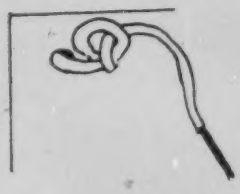


Figure F

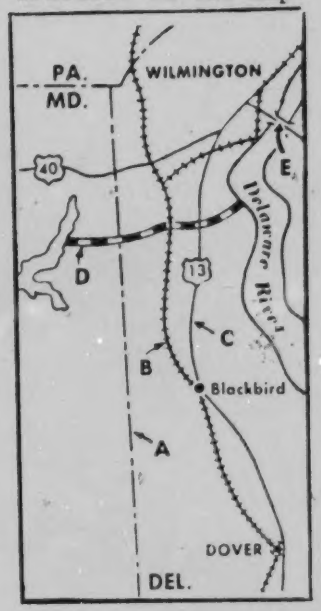
Figure G

Figure H

Check
Suggestions for Electric Response Board

What letter identifies each of the following features on the map?

B
C
D
E



mountains

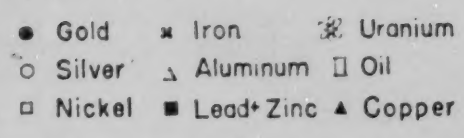
compass rose

State boundary

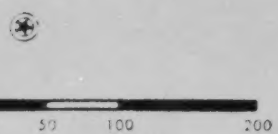
capitol

highway

scale of miles



railroad



canal

bridge

legend

Check
Level C, Skill 1a

MATCH THE BEST SYMBOL TO THE WORD!

house

church

lake

gas station

mountains

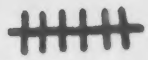
railroad tracks

bridge

park

street

school



Activities for

GRAPHS AND TABLES

Lesson Plan
Level B, Skill 4
Level C, Skill 4 a & b
Level D, Skill 4 a & b

TITLE: Graphing

OBJECTIVES: Level B, Skill 4
Level C, Skill 4 a & b
Level D, Skill 4 a & b

MATERIALS: Paper, pencils, worksheets, rulers, stopwatches, tapes

DIRECTIONS:

1. Give an introductory lesson on what a graph (picture, bar and circle) is, what they mean and how to make one. Use descriptive terms: most, fewest, largest, more, etc. to express comparisons.

2. Set up individual or group project work periods where students can gather data for making graphs. Give them paper, charts, stopwatches, tapes, rulers, and most of all, time and space to gather data.

   Students can gather data about classmates such as number of brothers and sisters, height, weight, hobbies, pets, favorite foods, distance they can run, jump, how fast they can run, shoe size, etc. -- positively limitless!

3. Allow for a large area of the bulletin board to display all the completed graphs.

4. Make up work (play) sheets and graph searches such as those included in the packet; e.g., Is there anyone who weighs between 60 and 70 pounds? If so, who? _____ Is a Pisces or Aries a hamster?

5. Have students make up their own questions and graph searches using only the data supplied by the graphs on the bulletin board.

Worksheet
Level B, Skill 4
Level C, Skill 4 a & b

Date _____ Name _____

Graphing #1 Weight

1. Who weighs the most in class? _____

   How much? _____

2. Who weighs the least? _____

   How much? _____

3. What is the difference in weight between the heaviest and lightest person in our class? _____ pounds

4. How many pounds do the third graders weigh as a group? _____

5. How many pounds do the fourth graders weigh as a group? _____

6. How many pounds do the fifth graders weigh as a group? _____

7. How many pounds do the sixth graders weigh as a group? _____

8. Which group weighs the most? _____

9. Which group weighs the least? _____

10. Add the weight of the third, fourth, and sixth graders. _____

Worksheet
Level B, Skill 4
Level C, Skill 4 a & b

Date _____ Name _____

Graphing #2

1. Which month of the year has the most birthdays for our class? _____

   _____ How many? _____

2. Which month has the least? _____

   How many? _____

3. Who has the most brothers and sisters? _____

   How many? _____

4. Who has the most brothers? _____

   How many? _____

5. Who has the most sisters? _____

   How many? _____

6. Who doesn't have any brothers or sisters? _____

7. What is the most popular pet in our class? _____

8. Who has the most pets? _____

9. Who doesn't have any pets at home? _____

10. What is the size of the largest bicep in class? _____

    Who has it? _____

Worksheet
Level D, Skill 4 a & b

Date _____ Name _____

Graphing #3 Graph Search

1. Is there anyone in our class who weighs between 70 and 90 pounds, over 5 feet tall, has a dog as a pet, likes hiking as a hobby and has a sister? _____

   If so, who? _____

2. Is there anyone who plays the piano, has a brother, born in one of the spring months, an Aries, weighs more than 85 pounds, loves to play both baseball and football and is over 10 years old? _____

   If so, who? _____

Lesson Plan
Level D, Skill 4 b

TITLE: Graphs - Approximate Amounts (a teaching unit based on teacher resource file materials)

OBJECTIVE: The child determines approximate amounts on picture graphs with whole symbols and on bar or line graphs with bars or dots representing numbers that fall between those marked on the axis.

MATERIALS: Teacher Resource File: Level D, Skill 5
Transparency film (Thermofax)

DIRECTIONS: Twelve thirty-minute lessons to run about three weeks.

Day 1 - Large group-tally the number of reading and math books in the room. Transfer the information to a chart using one symbol to represent two books and half a symbol to represent one book. Remake the chart changing the key.

Day 2 - Independently work worksheet #1. Check work and discuss. Those who show mastery go to free-time activities. Those who need extra help meet with the teacher in a small group.

Day 3 - Large group-tally and work worksheet #2. Check using transparency with tick marks.

Day 4 - Go outside and use tennis wall to show fractional parts and change of key showing hundreds and thousands. Use students as points on the graph.

Day 5 - Independently work worksheet #3. Check and discuss. Those who show mastery go to free-time activities. Those who need reteaching meet with teacher in small group.

Day 6 - Go outside and use the racing lanes and climbing apparatus as graphs. Use students as points on the graph showing fractional parts. Set up competition between two teams, race to the right point on the graph.

Day 7 - Independently do worksheet #4. Check and discuss. Those who show mastery go to free-time activities. Those who need help meet with teacher.

Lesson Plan
Level D, Skill 4 b (continued)

Day 8 - Large group-tally data and transfer it to a line graph using a chart and/or transparency.

Day 9 - Go outside and use the students and the racing lanes to make a living line graph with a rope. Review fractional parts and tick marks. Set up team games or races to the correct point on the graph.

Day 10 - Independently do worksheet #5. Check and discuss. Those who show mastery go to free-time activities. Those who need help meet with the teacher.

Days 11 and 12- Students construct graphs from data they gather or that is supplied. They will ask and answer questions about their graphs. They will meet with the teacher after completing the project to discuss their graphs.

D. 4 b
Activity 1
Transparency 1

Graphs: Approximate Amounts

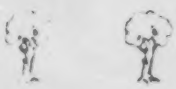
Study Skills
Level D
Skill 5

D. 4 b
Activity 2
Worksheet 1

Graphs: Approximate Amounts

Study Skills
Level D
Skill 5

TREES PLANTED IN MINDEN

1967	
1968	
1969	
1970	
1971	
1972	

Key: each = 20 trees

1. How many trees were planted

   in 1967? _____

   in 1970? _____

   in 1971? _____

2. During which year were

   70 trees planted? _____

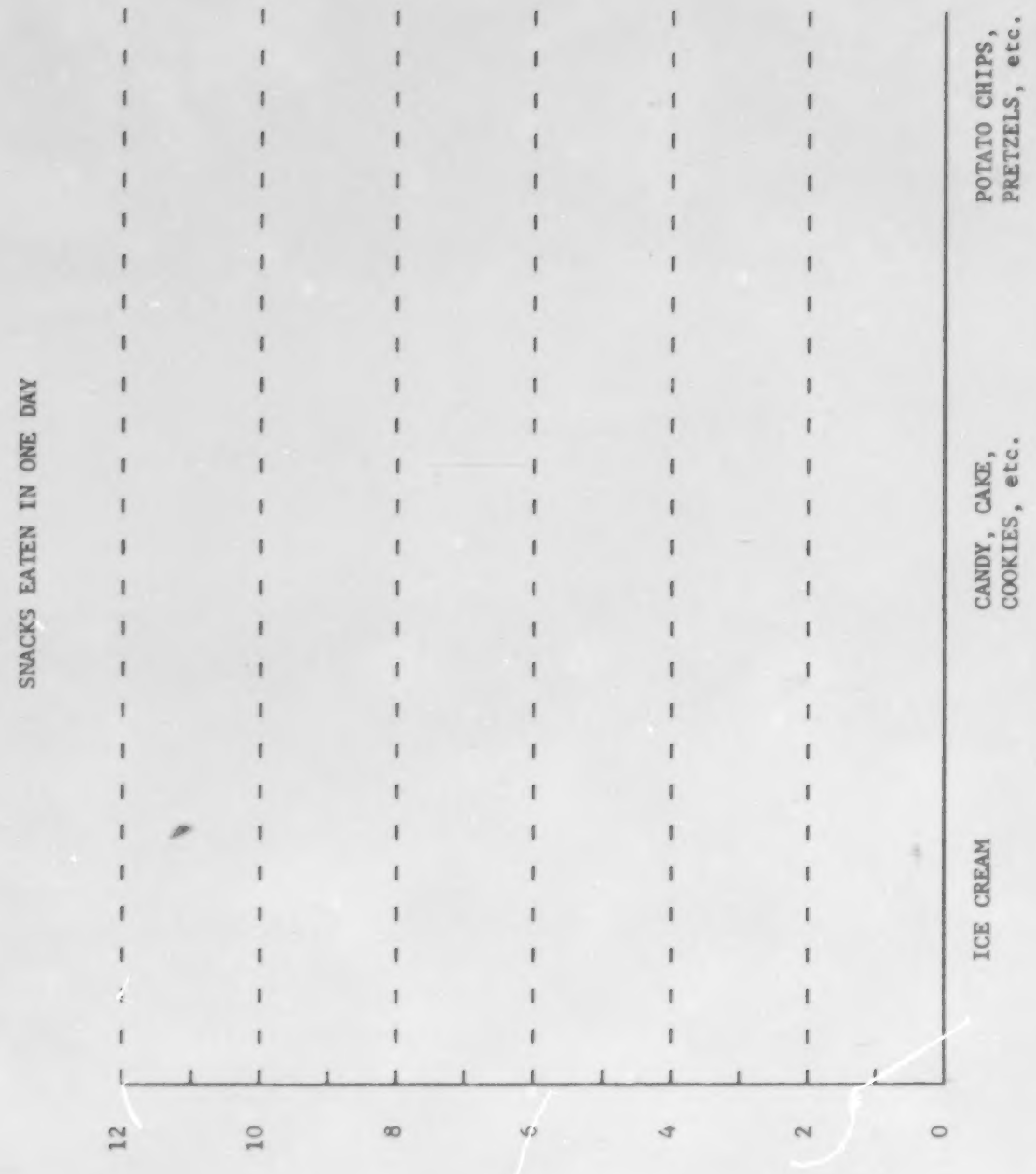
   40 trees planted? _____

   110 trees planted? _____

D. 4 b
Activity 3
Worksheet 2

Graphs: Approximate Amounts

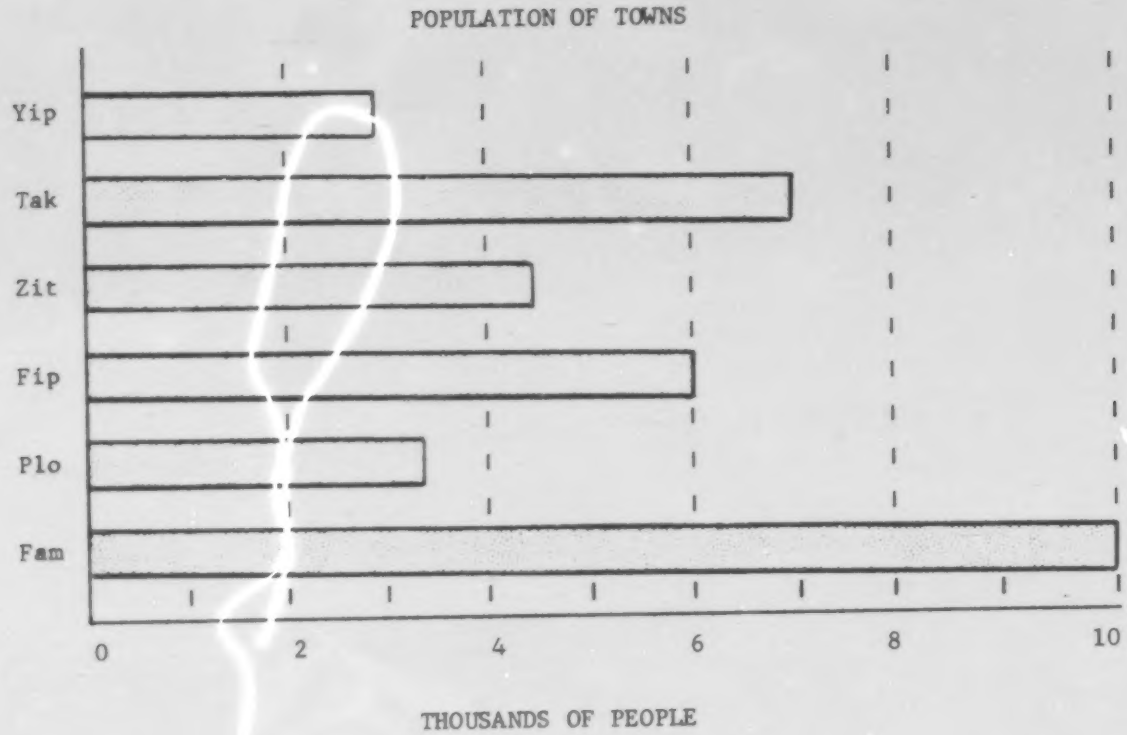
Study Skills
Level D
Skill 5



D. 4 b
Activity 4
Worksheet 3

Graphs: Approximate Amounts

Study Skills
Level D
Skill 5



DIRECTIONS: State the number of people that live in each town. Note that each number on the graph stands for that many thousands of people.

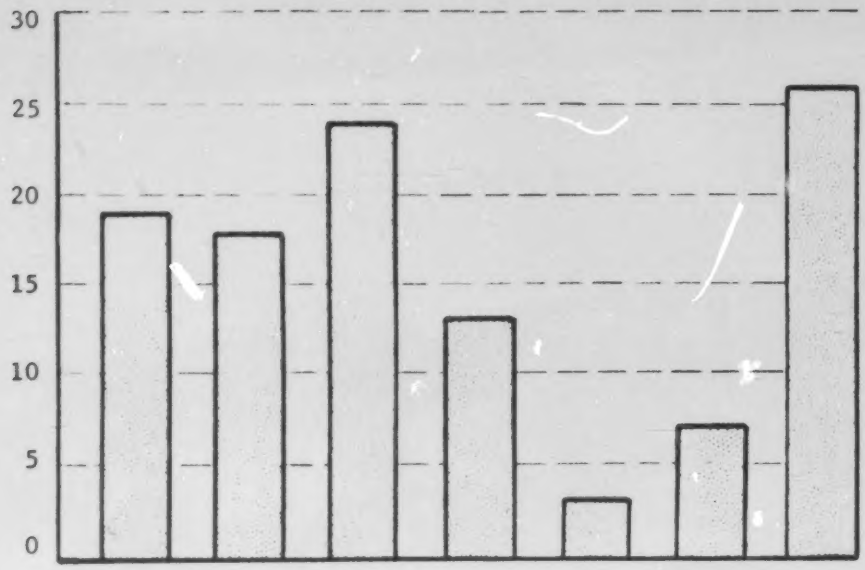
1. Yip _____
2. Tak _____
3. Zit _____
4. Fip _____
5. Plo _____
6. Fam _____

D. 4 b
Activity 5
Worksheet 4

Graphs: Approximate Amounts

Study Skills
Level D
Skill 5

DISTANCES KATIE RODE HER BICYCLE



On which day did Katie ride her bicycle

1. 26 miles? _____
2. 13 miles? _____
3. 18 miles? _____

How many miles did Katie ride her bicycle

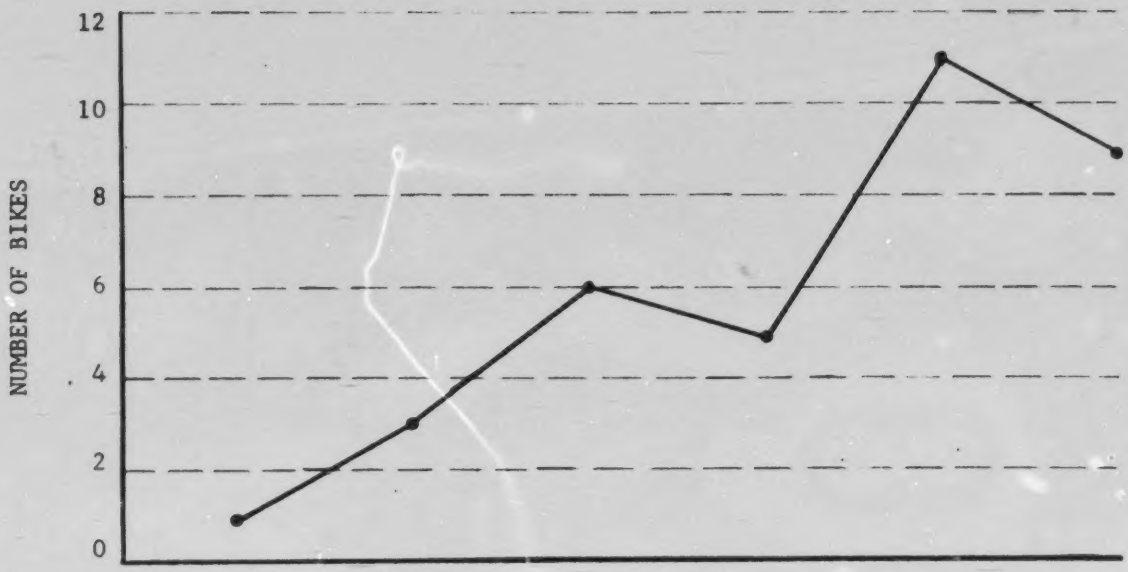
4. on Thursday? _____
5. on Tuesday? _____
6. on Sunday? _____
7. on Wednesday? _____
8. on Friday? _____

D. 4 b
Activity 7
Worksheet 5

Graphs: Approximate Amounts

Study Skills
Level D
Skill 5

BIKES SOLD BY TOY STORE



On which day did the toy store sell

1. 5 bikes? _____

2. 9 bikes? _____

3. 6 bikes? _____

How many bikes did the toy store sell

4. on Monday? _____

5. on Wednesday? _____

6. on Friday? _____

Lesson Plan
Level E, Skill 4 a

TITLE: Graphs - Determine Differences Between Numbers Extracted

OBJECTIVE: The child compares, by adding or subtracting, the amounts represented by bars at or between the lines on a bar graph.

MATERIALS: Teacher Resource File/Study Skills 3" x 5" file cards

1. (Programmed slide presentation created by Tony Weiler, Sakamoto School.) This synchronized tape/slide presentation covers all the concepts of E-4a. Beginning with simple bar graphs and ending with a complex cumulative graph, the child is led through all the basic steps required to derive the necessary data. Written responses to tasks given the child during the programmed presentations are evaluated at the end by the teacher. Teachers who lack equipment or time to prepare a similar presentation should use materials provided in the Teacher Resource File/Study Skills.

2. (Game) LIFE, with variations. This is described in detail on page _____. The child uses a group-constructed graph and Skill E-4a to determine moves on the game of LIFE.

3. (Individual activity) Wisconsin Skill E-4a, activity 3 and 4, worksheets 3 and 4, from Teacher Resource File. These two bar graphs and related activities require the individual student to derive differences from the data supplied.

4. (Group activity) Wisconsin Skill E-4a, activity 1 and 2, worksheets 1 and 2, from Teacher Resource File. These group activities require the students involved to first gather data and graph it, then use Skill E-4a to derive comparative differences.

5. (Self-check) This self-administered quiz allows the student to measure his readiness for the post test. It is derived from the post test itself -- a sampling.

Slide/Tape Program
Level E, Skill 4 a

TITLE: "Science: Earth 2020"
Programmed slide presentation with synchronizing instructional tape. Basic concepts of Wisconsin Skill E-4a are presented, responses are required of the learner, and a final folder is submitted to the teacher for evaluation.

OBJECTIVE: Given the slide presentation in a period of 40 minutes, the student will demonstrate mastery of the essential concepts of Wisconsin Skill E-4a by deriving data from self-constructed graphs, as evaluated by the teacher at the end of the task.

MATERIALS: Tape "Science: Earth 2020, Using graphs to compare data"
Slides "Science: Earth 2020, Using graphs to compare data"
Paper, pencil, metric ruler, Synchromat

DIRECTIONS FOR CONSTRUCTION: Copy materials on paper and manufacture a cassette tape if you desire to use this activity, since exact duplication requires specific and hard to find materials and equipment.

This is a sequential presentation of programmed material that requires responses of the participating child as an integral segment of the experience.

DIRECTIONS FOR USE: The child simply turns the equipment on and follows verbal instructions. At the end, the machine instructs the child on setting up the materials for the next presentation to the next individual.

VARIATIONS: If the child cannot complete the presentation because of mitigating learning problems or insufficient mastery of essential concepts, the teacher then directs the child to alternate activities and modes. The child returns and completes the presentation after completing the alternate activities.

Activity
Level E, Skill 4 a

WRITE UP YOUR GAMES!

TITLE: Variation of the game LIFE

OBJECTIVE: Given instruction on the construction of graphs, the students will gather data on ten variables and use random cards to calculate the differences between the variables in the graphs and use this information with variations to play the game of LIFE.

MATERIALS: Graph paper, ruler (metric), pencil, the game of LIFE, blank colored file cards with rounded corners marked with numbers 1 to 10 -- one number each card, and a set of written instructions

DIRECTIONS FOR CONSTRUCTION: Purchase or duplicate the game of LIFE. Get 100 file cards of various colors and begin numbering them 1 to 10 repeatedly. Shuffle the cards. Get together materials the children will need as listed above. Manufacture an artistic learning center.

DIRECTIONS FOR USE:

1. Students will meet with the teacher to decide which 10 variables to graph, AFTER completing Activity 1 from lesson plan.
2. Students will make the graph and have it approved by the teacher.
3. Students will sit down together, go over the rules, and will play the game. For each carefully constructed graph, the students may play the complete game at most - 3 times.
4. If the students wish, they may construct a new graph and play the game again on catch-up day.

VARIATIONS: See instruction sheet.

LIFE

Special Rules

You will make a graph and use the information on the graph to play the game of LIFE.

1. Form a group of four people.

2. Together, choose one of the following graphs to make:

   A. The height, in centimeters, of ten people.
   B. The number of buttons on the clothes of ten people.
   C. The diameter, in centimeters, of ten different roles of tape.
   D. Make ten piles of books so that there are ten different books and ten of each kind grouped into ten piles.
   E. If you have another idea, GREAT! It must be approved by the teacher.

3. Be sure the graph is in BAR-GRAPH form and each of the ten things on the graph has a number of 1 to 10.

4. Place the stack of colored cards on the floor with the game and be sure there is enough time to play -- at least 40 minutes.

5. Choose a banker and follow the regular rules of the game with this one change:

   YOUR GRAPH WILL BE USED TO DECIDE HOW FAR YOU MOVE.

   Each player, upon his turn, takes TWO cards. The player then matches the number on the cards with the items on the bar graph. Using a simple subtraction problem, the player finds the DIFFERENCE between the two items on the graph by subtracting the amount of the smaller item from the amount of the larger item. If the result is a single-digit number, the player moves that many spaces. If the result has two or more digits, the player then adds these digits to get a single-digit number: 13 = 1+3 = 4; or: 567 = 5+6+7 = 18 = 1+8 = 9. When all of the cards in the stack have been used, all the players give their cards to the banker who shuffles them and sets them out for the game to continue.

6. All other rules of the game are carefully followed.

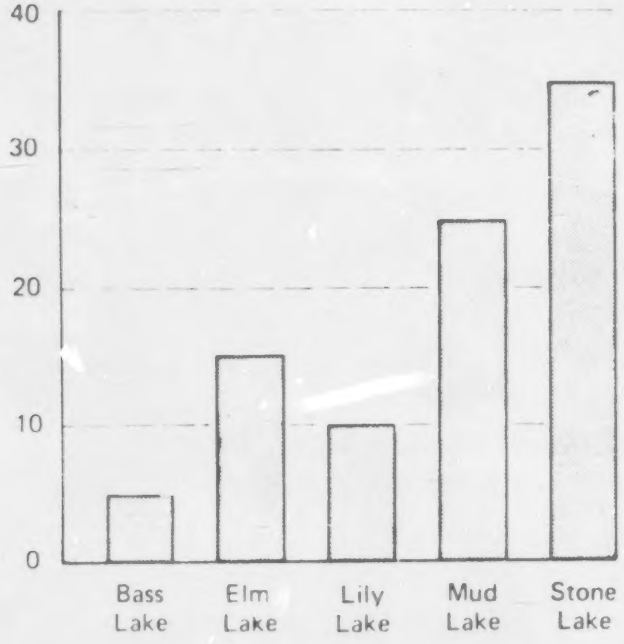
CORRECT ANSWERS: 1. E 2. Stanley 3. T 4. T 5. T

If you passed either four or five of the questions, you are ready for the post test.

FOLD BACK BEFORE TAKING THE SELF-TEST!

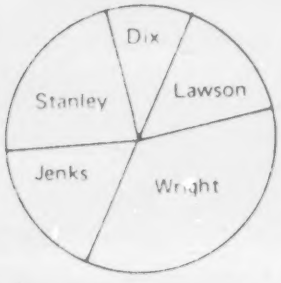
NAME: _____ DATE: _____

ANSWERS: 1. ____ 2. _____ 3. ____ 4. ____ 5. ____

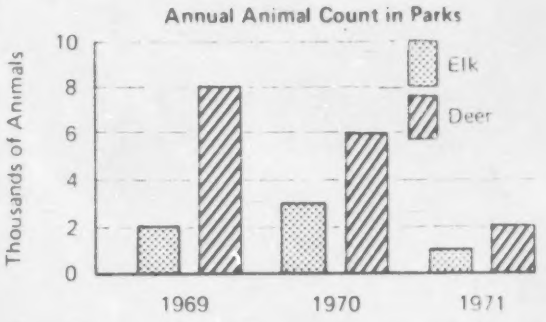


1. How many fish were caught in Bass and Mud Lakes together?

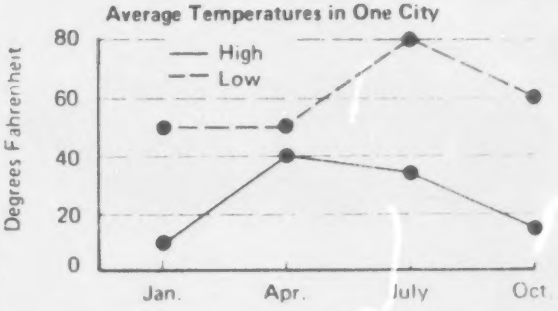
A. 2½ B. 3 C. 5
D. 12 E. 30



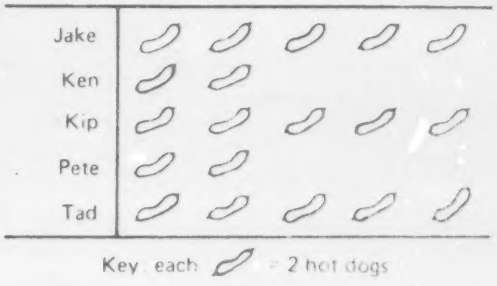
2. Which farmer is harvesting more corn than Jenks but less than Wright?



3. This graph shows how the parks' elk and deer populations changed during a three-year period. (Write "T" or "F")



4. This graph shows that high and low temperatures differ least in the spring. (Write "T" or "F")



5. This graph shows that Ken and Pete did not like hot dogs as well as the other boys. (Write "T" or "F")

Activity
Level E, Skill 4 b

TITLE: Circle Graph

OBJECTIVE: Level E-4b -- as can be related to social studies
Determines purposes and makes summary statements.

MATERIALS: Construction paper, marking pens

DIRECTIONS FOR CONSTRUCTION: Make an example of a circle graph using information from an almanac.

DIRECTIONS FOR USE: Students first study graph and answer questions about it. Example: Value of U.S. imports from three continents. Then students make their own circle graph using information which interests them from the almanac.

Activity
Level E, Skill 4 b

TITLE: Picture Graph

OBJECTIVE: Level E-4b -- as can be related to social studies
Determines purposes and makes summary statements.

MATERIALS: Large paper, marking pens, large plastic trash can, masking tape, construction paper

DIRECTIONS FOR CONSTRUCTION: Make a large graph with spaces for teams on one axis and weekly dates on the other axis. Make an example of a small bottle that the students may use as a model for a cut-out.

DIRECTIONS FOR USE: Divide class into teams. Each team keeps track of the number of bottles they have collected by using one small picture to equal five bottles. Students can make predictions about how the collecting will turn out; they may find out new information by drawing conclusions from the data on the graph.

VARIATIONS: Any recyclable materials may be collected over any length of time.

Activity
Level E, Skill 4 b

TITLE: Line Graph

OBJECTIVE: Level E-4b -- as can be related to science

MATERIALS: Ditto worksheets, crayons or marking pens

DIRECTIONS FOR CONSTRUCTION: Make a ditto worksheet with temperature degree markings on one axis and days of the week on the other axis. Leave blanks for the title of the graph at the top and a key showing names of two cities with a line marking cities represented.

DIRECTIONS FOR USE: Students use daily newspaper to record daily high temperatures for their chosen cities on their graphs. They may be asked to compare the cities' temperature variations and make predictions about future temperatures.

VARIATIONS: Temperatures may be recorded over longer time periods; both highs and lows may be used; rainfall could be recorded by modifying worksheet.

Activity
Level E, Skill 4 b

TITLE: Bar Graph

OBJECTIVE: Level E-4b -- as can be related to health and science

MATERIALS: Large paper, index cards

DIRECTIONS FOR CONSTRUCTION: Make large graph with spaces for names of students on the bottom; mark the graph off in inches vertically (72" x 72").

DIRECTIONS FOR USE: Using three different bars, students mark on the graph their measurements; i.e., length of arms, feet, body. After all students have completed this task, activity cards may be used which ask the students to make conclusions from the information on the graph.

VARIATIONS: Any measurements of body parts may be used.

Activity
Level C, Skill 4 a

TITLE: Story and Graph

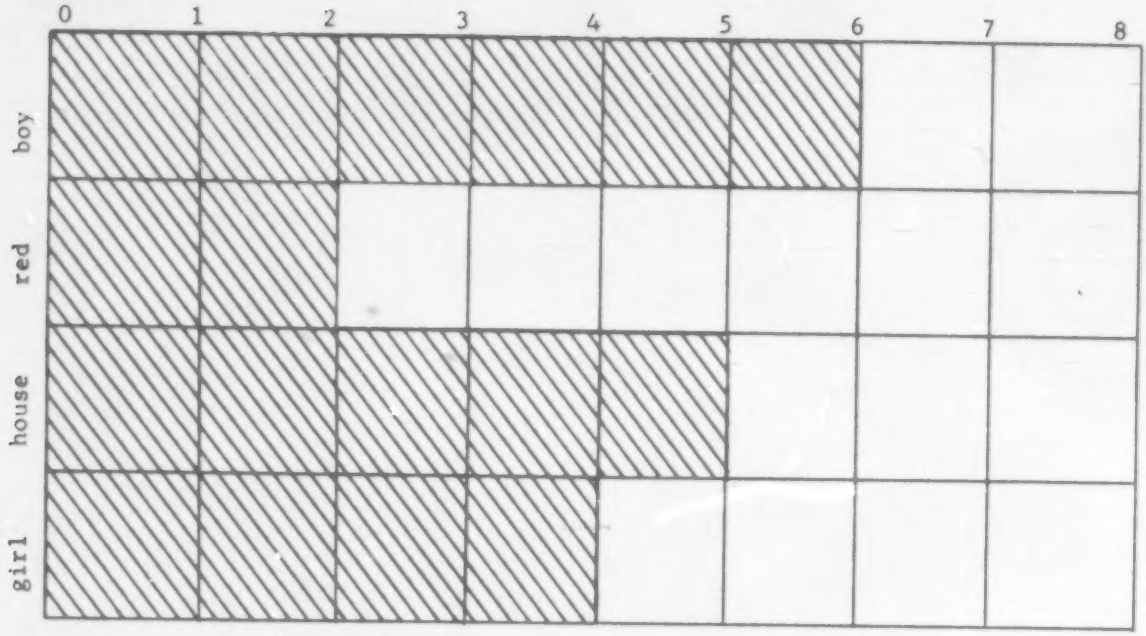
OBJECTIVE: Determine differences between numbers extracted

MATERIALS: Graph paper or paper, ruler and pencil

DIRECTIONS:

1. Read a story to the children. Have them listen for selected words.
2. Mark the tally sheet (see next page) every time the words occur.
3. Graph this information on a bar graph.

STORY and GRAPH



TALLY SHEET

Word	Number of Times	Word	Number of Times
boy	𝍸 |	red	||
girl	||||	house	𝍸

Activity
Level C, Skill 4 b

TITLE: Basket Task

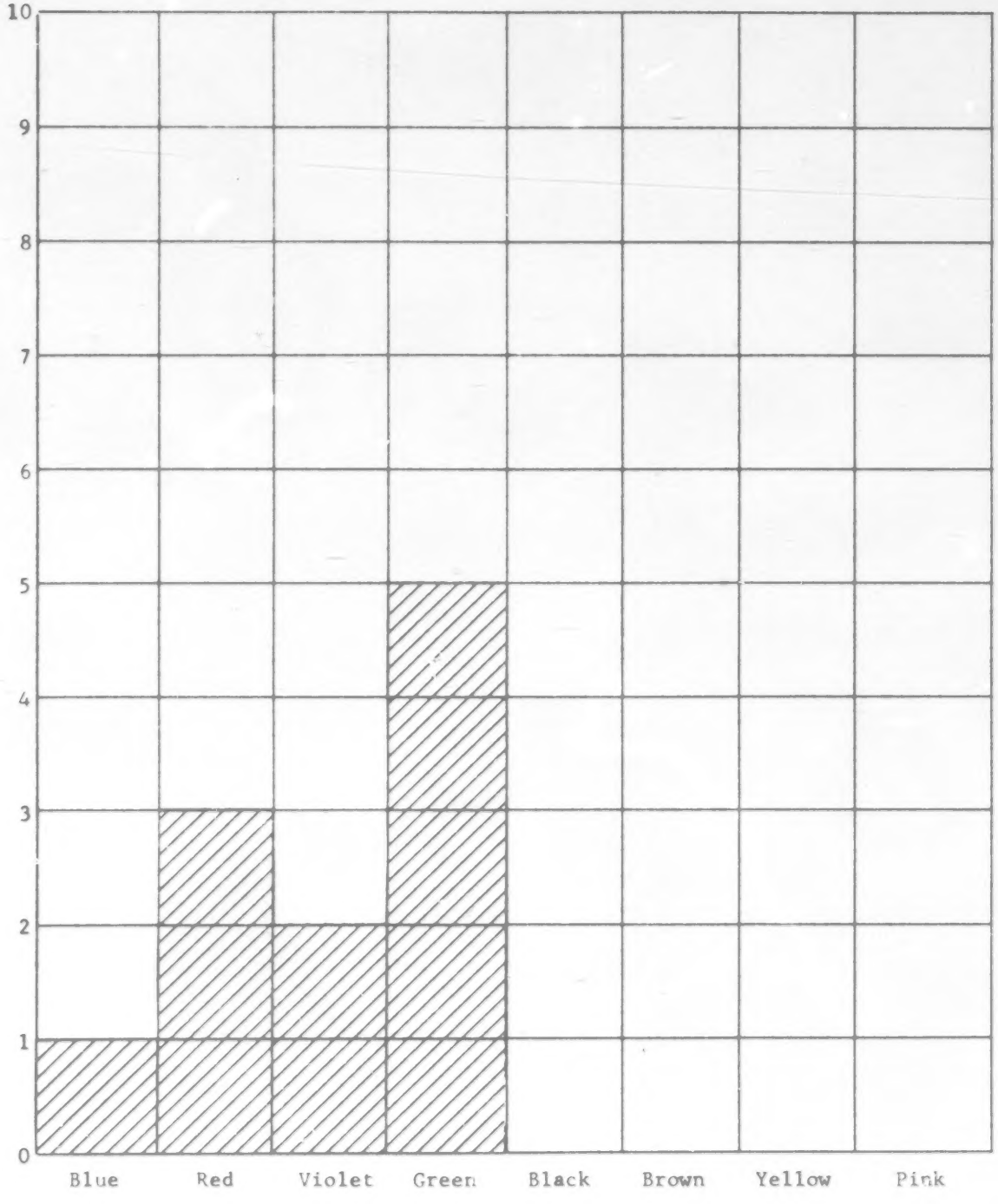
OBJECTIVE: Determine differences between numbers extracted

MATERIALS: Crayons (box of left-over pieces is ideal), dice, paper and ruler

DIRECTIONS:

1. Give each child graph paper or make graph paper with ruler.
2. Each child throws the dice to determine how many crayons of each color he will receive.
3. Each child draws a bar graph to show the number of crayons of each color.

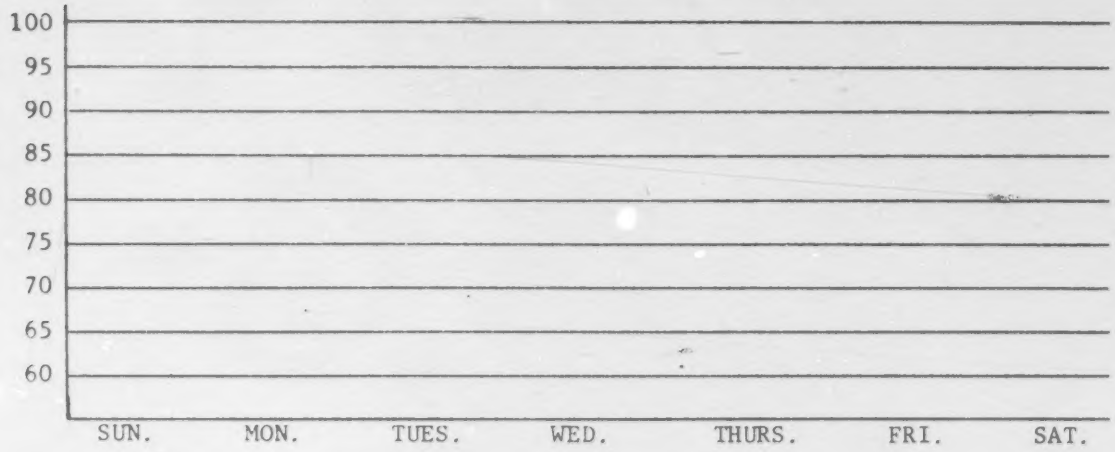
CRAYON BASKET TASK



Worksheet
Level D, Skill 4 a

NAME _____

HIGHEST RECORDED TEMPERATURES IN OUR TOWN LAST WEEK



Make a graph using the temperatures on the chart. Then answer the following questions:

1. What day was the temperature the highest? _____

   What was it? _____

2. What two days had the same temperature? _____

   _____

3. What day had a temperature of 80^{o}? _____

4. What is the difference between the temperatures of the hottest and coolest days? _____

5. What day was it the coolest? _____

   What was it? _____

6. How many degrees difference was there between Tues. and Thurs.? _____

7. Did the temperature go up or down from Thurs. to Sat.? _____

Activities for

REFERENCES

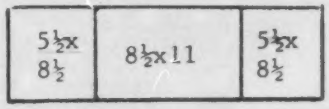
Activity
Level D, Skill 6b

TITLE: Dictionary Game

OBJECTIVE: Child locates, finds words in, and demonstrates knowledge of a dictionary.

MATERIALS: 2 pieces of chip board 8½x5½, 1 piece of chip board 8½x11, 12 small pictures of objects that may be found in the dictionary, 12 strips of chip board 1x4. 1 manila envelope, masking tape, contact paper (optional), and 1 marking pen

DIRECTIONS: Tape one 8½x5½ piece of chip to each side of the 8½x11 piece of chip so that they can fold over the front surface of the larger board.



Divide the 8½x11 chip into 12 equal sections using marker.

Place a picture in each square.

Write words of pictures on 1x4 chip strips

Place in manila envelope that is taped on back of game along with answer card.

Study Sheet
Level D, Skill 6a

Sothic cycle, in the Egyptian calendar, a cycle of 1460 years of 365 days each. Supposedly each year started on the day when the star Sirius (Sothis) rose with the sun, but the interval of 365 days was about ¼ day short of being a full year. Hence every four years the New Year started another day too soon, and the seasons moved "backward" (from March to February, January, etc.) through the year. Once in 1460 years, however, New Year's Day comes correctly with the proper rising of Sirius. This 1460-year interval constitutes a Sothic cycle.

Sou [*so*], old French coin of various metals and values; name applied to former French 5-centime piece, historical value about one cent.

Souchong [*so-chŏng'*] **tea** T-44.

Soul. *see also in index* Transmigration of the soul
- Egyptian beliefs M-546
- Greek beliefs H-2

Soulé [*so-lā'*], **Pierre** (1801–70), American political leader, born France; U.S. senator from Louisiana 1847–53, minister to Spain 1853–55
- Ostend Manifesto C-374

Sound S-258–62, P-305–6, *diagrams* S-259–62, *graph* S-260, *Reference-Outline* P-309
- amplification P-268d–g, R-60–1, *diagrams* P-269–70, R-46–7, 57
- bibliography S-64d, b, H-192, P-310
- ear E-4–5, *diagram* E-4, *pictures* E-4–5
- echo E-44, S-2o1, *diagram* S-261
- frequencies S-260, *diagram* S-262
- highest and lowest audible S-260
- intensity S-260, P-441e, *picture* P-441e
- motion pictures, *see in index* Motion pictures, *subhead* sound
- music M-563, S-262, 260–1, 259, *diagrams* S-259, 261–2
- noise, *see in index* Noise
- oceans, depth measurement N-86
- overtones S-260–1, *diagram* S-262
- pitch S-259–62, *diagrams* S-261
- radio transmission of R-57–61, *diagrams* R-45–7, 51, 53, *pictures* R-52–3, field patterns R-53, *diagrams* R-53
- reflection S-261, E-44, *diagrams* S-261
- reproduction
  - phonograph P-268d–70, *diagrams* P-269–70, *pictures* P-268d–70
  - tape recorder, *see in index* Tape recorder
- sensation N-130
- speed S-259, *graph* S-260, first measured E-44
- stereophonic in radio R-50, *picture* R-49
- supersonic S-260, sonar S-261, S-495a
- telephonic transmission T-56–7, *diagrams* T-56–7
- tone S-260–1, *diagrams* S-262
- vacuum stops, *diagram* S-260
- voice V-376–7, producing apparatus, *diagrams* V-377
- waves S-258–62, *diagrams* S-259–62, *graph* S-260
  - ocean O-397e, *diagram* O-397e, *graphs* O-397e, depth measurement S-261, O-396, instruments, *pictures* O-398c, speed, *graphs* O-397e

Sound, in geography, a narrow strip of water joining two greater bodies of water, or lying between an island and the mainland, an arm or inlet of the sea.

Sound barrier. *see in index* Sonic barrier

Soundboard, of piano P-317, S-262

Sound effects, in dramatic work
- motion pictures M-513, 512, 523, 524
- stage T-152

Sounder, in telegraphy T-52

Sounding O-396
- oil P-235, *diagram* P-235, *picture* E-360

Sounding balloon B-39, *picture* B-39

Sounding rockets S-342a–b

'Sound of Music, The' (1965), motion picture, *picture* M-510

Sound suppressor, of jet engine J-447, *diagram* J-447, *picture* J-447

Sound track, in motion pictures M-506, 512–13, 514, 515, 524, *diagrams* M-506–7

Soup C-557
- American Colonies, *picture* A-307
- Middle Ages, *picture* M-297

Source, of river, *diagram* R-210

Sourdough, a prospector or settler, particularly in Alaska and Canada, named from his practice of carrying a piece of sour dough, leaven saved while baking bread and used to raise the next dough.

Sour gum. *see in index* Black tupelo

Souris [*sur'i*], P.E.I., Canada, town on Gulf of St. Lawrence 44 mi. n.e. of Charlottetown, pop. 1443, fishing, bird sanctuary nearby, P-497f, *map* P-497h

Souris [*sur'is*] **River,** or **Mouse River,** rises in s. Saskatchewan, flows 500 mi. to Assiniboine River, making wide loop into North Dakota, S-49c, N-340, *maps* C-98, N-340, S-491, M-89i, a

Sourwood, or **sorrel tree,** a small tree of the heath family with clustered white flowers and acid-tasting leaves which turn red in autumn, common in Allegheny Mountain region.

Sousa [*so' sa*, also *so' zə*], **John Philip** (1854–1932), composer and bandmaster, known as "the March King," born Washington, D.C., of Portuguese ancestry, leader of famous Sousa's Band ('The Washington Post', 'Liberty Bell', 'Stars and Stripes Forever', and other marches, comic operas, and songs), B-55, *pictures* B-53

Sousaphone, musical instrument H-227, *picture* M-569

Souslik, animal, *see in index* Suslik

Sousse [*sos*], or **Susa** [*so' sə*], Tunisia, seaport in n.e., pop. 48,172, cereals, olive oil; dates back to 9th century B.C. when it was founded by Phoenicians, *maps* A-274, A-94

Souster, Raymond (born 1921), Canadian poet C-114, 117

South, a direction D-121, *pictures* D-122

South, the, states of the United States south of the Mason-Dixon line U-56–67, *map* U-58–9, *pictures* U-56–7, 60–1, 64–7, *Reference-Outline* U-133–4, *see also in index* Civil War, American; Confederate States of America; Reconstruction period, United States, *subhead* geographic regions, South, the; *also* names of states in the South
- agriculture U-60, 62–4, *pictures* U-56, 64, colonial A-313, 314, *picture* A-313
- architecture, colonial A-310, S-159, *pictures* A-310, U-61, M-383
- cotton C-585, 591, U-60, 62, *see also in index* Cotton
- forests and forest products F-345, U-64, 65, P-328
- industrial development U-66–7, *pictures* U-65
- location, *locator maps* U-374, U-58, 62
- minerals U-66
- mountain dances F-290, *pictures* F-290
- natural features U-57
- Negroes N-124, 125–125a, 126, 126a, c–e, f, *pictures* N-126d, 125b, *see also in index* Negro, *subhead* United States, Slavery
- plantation life, *picture* L-367, colonial times A-307–14, *pictures* A-307–9, 312–13
- special days F-92, 93

South, University of the, at Sewanee, Tenn., Episcopal, opened 1868, arts and sciences, forestry, theology, graduate studies

Worksheet
Level D, Skill 6a

INDEX INVESTIGATE SHEET

Indexes are used to find:
a. Brief information about a topic
b. A single item of information
c. All the information on a major topic

From the study sheet showing one page of the Fact-Index, find the following information:

1. List all the main entries.

2. List all the subheadings under the topic Sound.

3. In which volumes of the encyclopedia can you find information about the Sound--Music?

4. Where will you find information on the sound barrier?

5. In what volume can you find a map of Souris East?

6. The Sourwood or Sorrel Tree has what color flowers?

7. What kind of illustrations are in the subheading for Phonograph?

8. Bibliographies for Sound can be found in volumes.....

9. Where will you find a graph about the speed of sound?

10. What is a Sourdough? Where are most Sourdough's located?

Worksheet
Level E, Skill 6c

INDEX INVESTIGATE SHEET

Cross References: There are two types of cross references in the encyclopedia. These are called SEE and SEE ALSO references.

SEE references mean that the information on that topic will be found under another heading; for instance, TIGERFLOWER See Tigridia.

SEE ALSO references mean that more information on that topic will be found under other headings; for instance, Arabs A-469. See also Bedouins; Moorish Architecture; Moors.

Using any encyclopedia, take one page of the Index and check through each entry. Write down each SEE and SEE ALSO entry you find.

Look up any three of the following topics in the Index. Give the encyclopedia used, the volume number and the page number where the main entry can be found.

Brazil Nuts

Bryce Canyon National Park

Coat of Arms

Dairying (and Dairy Products)

Dinosuars

Dogwood

Erosion

Fog

Fuel or Fuels

Lake Geneva

Gold

Gravity or Gravitation

Harbor

Jupiter

Narwhals

Opal

Poodle

Prairie Dogs

Rattlesnake

Worksheet
Level C, Skill 6a

WORKSHEET FOR THE INDEX

Using only the Index for Encyclopedia Britannica, Compton's, and Book of Knoweldge, answer these questions:

1. Where is the Index located in:

   Encyclopedia Britannica

   Compton's

   Book of Knowledge

2. Give all the volumes that have information on the subject Toys:

   Encyclopedia Britannica

   Compton's

   Book of Knowledge

3. Give the volume and page number for the first entry for the subject Christmas:

   Encyclopedia Britannica

   Compton's

   Book of Knowledge

4. Give the dates for the birth and death of Marco Polo:

   Encyclopedia Britannica

   Compton's

   Book of Knowledge

5. Give all entries for a map of Canada:

   Encyclopedia Britannica

   Compton's

   Book of Knowledge

6. Using the Index of one of the World Atlases, find the page number for the map of the United States. Tell which atlas you used and the page number. _____

7. Find the page number for the map of San Jose, California. _____

Task Cards and Activities
Level D, Skill 6a
Level E, Skill 6a

IDEAS FOR USING INDEXES

Sports Index Information Cards

Task Cards:

1. How many home runs _____.
2. Rating in _____ League of _____.
3. Age span of players in various leagues.
4. Highest batting averages. (Number of task cards dependent on amount of information you have included in your Sports Index.)
5. Teams that won World Series during the last ten years.
6. Teams that won National League Pennant during the last ten years.

Telephone Book (Yellow Pages)

Task Cards--List different places to contact for:

1. Repairing a motorcycle.
2. Giving a party at home.
3. Giving a skating party.
4. Giving a party in a park.
5. Planning a trip to Europe.
6. Finding a foot doctor.

Encyclopedias

Task cards under each group:

1. Indians in Western Area
2. Presidents of U.S.
3. American Science Fiction Writers
4. List Different Breeds of Dogs
5. List Different Breeds of Cats

Guinness Book of World Records

Book of question cards

Activities
Level D, Skill 6a

IDEAS FOR LEARNING CENTERS--DICTIONARIES

1. Spelling Stumpers--Using the Dolch list, 50 words, each spelled three different ways. Choose the correct spelling. Student corrects his own list, checking his list by using the dictionary.

2. Spelling Bee (Oral)--Challenger checks spelling in the dictionary. No teacher participation.

3. Scrabble--Each player may look up three words in the dictionary. Challenger may use the dictionary.

4. Small Groups (Orally)--One student says a letter, next person adds a letter, on around, building a word.

5. What's in a Word

   Job Cards:

   a. Create an alphabet for a subject (Animals: A--Ant, B--Baboon, C--Chicken).

   b. Putting words from a list in separate categories.

   c. Many expressions and words contain the word up: give up, stick up, upset. Make a list of 50 expressions or words which contain the word up.

6. Word-O

   There are four words on a card. You are to supply the one word which ties them together. Example: baggage, elephant, travel, tree. The word is trunk.

7. Seek-A-Word

   a. Circle words--Words may spell out in any direction. Words are listed according to categories.

   b. Student chooses from a list of categories, makes his own list of 15 words or more and then makes his own Seek-A-Word puzzle.

8. Lights On

   The object of this game is to create as many words as you can. You must find the letters in order according to the arrows. You may skip over letters, but you may not go backwards. You will get extra credit for every word you find which deals with electricity.

Bartlett's Book of Quotations

Select one from 50 famous quotations and sayings. Find the source. Create a poster to illustrate the quotation.

Sears Catalogue

1. Pick out all the things you want without going over $100. Write down what you picked, the page number, the price, and how you plan to use it.

2. Task Cards

   a. How many different colors does the Sears "Best Washer and Dryer" come in? List the colors.

   b. How many 19" TV's are listed? Write down the features and cost.

   c. Sleeping bags--List weight, size and cost.

   d. Tents--Size and cost

   e. Bikes--Size and cost of three speeds
      Size and cost of five speeds
      Size and cost of ten speeds

3. 1908 Sears Catalogue

   Compare types and cost of various items in the 1908 edition and the present catalogue:

   a. box camera

   b. washing machine

   c. child's wagon

   d. baby carriage

9. Genius Cards (See instruction sheet)

Textbooks

1. Using glossary in text: Student selects story to read. Each story has a list of words to be defined from the glossary.
2. Given a list of words, the student looks up the word in text glossary, then finds the same word in the dictionary. Which number in the dictionary is the glossary meaning? What other information does the dictionary give about that word that the glossary does not?

Dictionaries

1. Dig A Little Deeper

   You may have to look for some prefixes and suffixes in your dictionary. Add whatever is missing.

   Yesterday we were feeling adventur_____ so we planned a hike. We were care___ to pack everything we would need for an enjoy___ day. Richard, my depend_____ brother, was the lead____. The sky was cloud_____, but we _____fused to be _____ couraged. Off we went. Sudden__ the clouds ____appeared and the sun came out. We had a fantas____day.

2. Word-A-Week

   One word remains on the board for a week (Example: Aprosexia). Each student must use the word three times in the classroom, during the week.

3. How many synonyms can you find for the following words? List ten under each word: cold -- run -- silent -- .

4. Left-handed Dictionary by Mad Magazine

   Give list of words to look up and write the meanings.

Activities
Level D, Skill 6c
Level E, Skill 6c

IDEAS FOR LEARNING CENTERS--
TABLE OF CONTENTS AND CROSS REFERENCES

A. Practice Using Table of Contents

1. Small Groups--Leader reads from card; oral response; find chapter and how many pages on specific questions.

2. Musical Chairs--A different book is placed on every other chair. Students have two minutes to find out type of book and contents. Then has two minutes to write information on card he carries at vacant chair.

B. Research

1. Make a list of sources to find information about the following:

a. List of famous people

b. Housing in specific area and time

c. Dialects of a certain region

d. Early rock groups

This is a general outline for unit work in any content area that identifies parts of the learning process that are utilization skills. It also identifies the level of the skill in the Study Skill File. Within the outline there are also listings of some suggested activities.

There is a stress throughout the outline for child-centered direction and choice. The process is seen as the means of teaching and reinforcing utilization skills.

Step I: Presentation or choice of topic within a content area (e.g., science, social studies, history, current events, art, literature, etc.)

Step II: Finding Information

A. Content Area Vocabularies

Dictionary Skills:
- Level D - use of dictionary for spelling check
- Level E - use of dictionary to choose appropriate meaning
- Level F - use of dictionary and its pronunciation key

Suggested activities for a research paper project, a learning center bulletin board or dramatic presentation:

1) Free reading in topic area and compilation of word lists - using dictionary or resource glossaries for meaning and pronunciation.
*2) Topic board for large group vocabulary compilation (perhaps a picture board).
*3) A picture-word collage in the topic area.
4) Hidden word game where the clues are word meanings.
*5) Password game using topic area vocabulary.
*6) Concentration game with a word card matched to a dictionary meaning card.
7) Simulated Hollywood Square game using correct and incorrect word meanings within the topic.
*8) Crossword puzzles with words from the content area. It may be a large, complex group activity on a bulletin board.
9) A puzzle (e.g.) whose assembly is determined by matching the word on the back of the puzzle piece to a definition on an assembly board.
10) Instant Bingo using a long list of topic words and giving definitions as call clues.
*11) An open-ended task: any vocabulary game using words from the topic area and requiring dictionary or glossary usage.

B. Uses of Resource Materials

Use of:
- I. Table of Contents
- II. Indexes
  - Level C - introduction to and location of each
  - Level D - use of each
  - Level E - use of each for finding specific information

Suggested activities for work with a research paper, bulletin board learning center and dramatic presentation:

1) Compile a card file bibliography for a topic area using listed or open-ended resource materials (note stress on use of table of contents or index).
2) Worksheets where answers are specific title headings or pages from selected resource books. Answers could give direct references for a specified topic.
3) Give a dissembled table of contents within a topic for reassembly.
4) Allow children to compile a card catalogue on any freely chosen topic area.
5) Game where different puzzle pieces (e.g., four pieces) are hidden within resource books on a given topic. Individuals or teams search for the coded pieces using the catalogued references.
6) Game where teams try to compile the longest bibliography (perhaps outlined) for a general or specific topic--- open-ended or timed contest.

Step III: Organizing Information

A. Organizing Vocabulary References

To various degrees this is a reverse use of the Study Skills listed under II-A --- devise a glossary of terms in the area of study to be incorporated into project form.

Suggested activities for:

Research paper

1) Compile a glossary for a resource paper (perhaps a picture glossary) individually or as a group project by pulling together entries from group members, alphabetizing and organizing.

Learning Center or Bulletin Board

1) The bulletin board or learning center activities can be student produced activities like those marked in area II-A - *.

Dramatic Presentation

1) Charades with topic words.
2) Puppets (e.g., paper bag puppets, stick puppets, etc.) that represent terms from the general topic - follow with improvisations with the puppets expressing word meaning(s).
3) Dramatic role playing of words identifying terms or processes (different from #1 in that it allows for the use of some oral language).

B. Organize the topic information into a viable form, e.g., bulletin board presentations, learning centers, research papers, lesson outlines, dramatic presentations, art exhibits, etc.

Depending on the form this is a pulling together of information into tables of contents, outlines, organizations, indexes, oral reports, etc. -- a reverse use of the Study Skills listed under II-B.

Suggested activities for:

Research paper

1) The research paper is the organized form, but it is not fitting for every student. Some should be channelled to committee work where they can receive support or to an activity that would teach utilization skills and culminate in a different product.

Learning Center or Bulletin Board

1) The bulletin board or learning center should have an organizational form that is similar to topic layouts as a total or partial table of contents (or even, perhaps, an index). The board or center might also have work or study sheets that work through elements of the center in an organized way (i.e., a "table of contents" for the center that is student produced). For example, a bulletin board about Japan may have layouts on clothing, housing, art, haiku, food, government, etc. The illustrations, models, maps, charts, graphs, etc., can be labeled corresponding to an index of the center - which can be a cover sheet for a book of individual reports from a committee or class working on the topic (or possibly related to a tape bank, catalogue of filmstrips, other resources or suggested activities).

Dramatic Presentation

1) Any free-form dramatic presentation that demonstrates an organization of information gathered using the utilization skills represents an "encoding" of the process. It might be a reinactment of an historical event. It might be a fictional account of people adapting to an economic or geographic situation that has been researched. It might be an abstract dramatization reflecting researched cultural precedents to an artistic or literary movement.
2) A specific example of a dramatic exercise: have a group of students role play elements of a simple topic outline. They would be questioned by or act out for another team whose task is to identify the element they represent and organize the people into an (not the) logical sequence - think "What's My Line".

Step IV: Evaluation and relation of utilization skills to other areas - hopefully not just to the test.

Activity
Level E, Skills 6c and 6d, Utilization

Following is a list of activities designed to motivate children to use reference materials.

1. Categories Game
2. "Far Out Facts" Cards
3. Student-designed reference mini-center
4. Newspaper Activities
5. Create a "New World Dictionary"
6. Index Detectives (See your librarian.)
7. Telephone Book
8. Magazines

Activity
Level E, Utilization

TITLE: Categories Game

OBJECTIVE: To motivate students to think and determine relationships of persons, places and things to each other. In the process of trying to determine a specific category, the student will become aware that the person, place or thing can fall under a number of different categories. Motivate students to use reference books.

MATERIALS: Blackboard

DIRECTIONS:

1. The stduent or group will give the specific category which the clues fall under with as few clues as possible.

2. The game can be played with the class as a whole or in small groups or teams.

3. The teacher or leader will go to the blackboard and ask a particular person or group to pick a number from 1 to 10 (numbers will vary according to the number of clues in each specific category). Given a number, look on your category sheet and write down that number and the clue for that specific category. Ask if anyone can identify the category. If it cannot be identified after a short discussion in the groups, go on and ask for another number. Repeat the procedure until a group correctly identifies the category.

4. *Responses can show sound thinking or guesses. Talk up and encourage any thoughtful response even though it may be incorrect.

5. The team which correctly answers the specific category with the fewest clues is declared the winner. Choose five or six categories per session. After the session is over, the group which has answered the most categories with the fewest number of clues is declared the overall winner. The reward or payoff can be whatever your behavior modification system may be.

6. Change the makeup of your groups often taking into consideration academic strengths and weaknesses and peer group relationships.

7. After playing the game, students will be motivated to come up with categories of their own using various reference books as a source of information. A list of activities and games to reinforce these skills is listed below.

*The game can be used as a reinforcement or review of various subject areas, preferably made by the students themselves.

NUMBER GAME

Cities of California

1. San Jose
2. San Francisco
3. Pasadena
4. Blythe
5. Indio
6. Sacramento
7. Eureka
8. Yuba City
9. Marysville
10. Sonora
11. Bakersfield
12. Berkeley
13. Brawley
14. Fresno
15. Napa
16. San Bruno
17. Santa Cruz
18. Long Beach
19. San Diego
20. Los Angeles

Provinces of Canada

1. Yukon
2. British Columbia
3. Alberta
4. Saskatchewan
5. Manitoba
6. Ontario
7. Quebec
8. Northwest Territories
9. Nova Scotia
10. Newfoundland
11. New Brunswick

Rivers of California

1. Sacramento
2. Trinity
3. San Joaquin
4. Eel
5. Feather
6. American
7. Pit
8. Klamath
9. Mad
10. Noyo
11. Owens
12. Russian
13. Calaveras

Countries of North America

1. United States
2. Mexico
3. Canada
4. Guatemala
5. Honduras
6. Nicaragua
7. Costa Rica
8. Panama
9. El Salvador
10. British Honduras

Countries of South America

1. Colombia
2. Venezuela
3. Guiana
4. Ecuador
5. Peru
6. Bolivia
7. Brazil
8. Chile
9. Argentina
10. Paraguay
11. Uruguay
12. Tierra del Fuego

Makes of Cars

1. Ford
2. Chevrolet
3. Buick
4. Oldsmobile
5. Chrysler
6. Lincoln
7. Cadillac
8. Volkswagen
9. Opel
10. Fiat

Sports Played with A Round Ball

1. Baseball
2. Basketball
3. Bowling
4. Ping Pong
5. Handball
6. Tennis
7. Golf

Professional Football Team Cities

1. San Francisco
2. Oakland
3. Los Angeles
4. San Diego
5. Dallas
6. Houston
7. New York
8. Atlanta
9. New Orleans
10. Miami
11. Pittsburgh
12. Kansas City
13. Chicago
14. Philadelphia
15. Washington, D.C.
16. Boston
17. Buffalo
18. St. Louis

Planets in Our Solar System

1. Neptune
2. Pluto
3. Jupiter
4. Mars
5. Mercury
6. Earth
7. Uranus
8. Venus
9. Saturn

Continents of the World

1. North America
2. Asia
3. Europe
4. South America
5. Australia/Oceania
6. Antarctica
7. Africa

Counties of California

1. Alameda
2. Santa Clara
3. Calaveras
4. Del Norte
5. Humboldt
6. Los Angeles
7. Mono
9. Orange
10. San Francisco
11. Yolo
12. Yuba
13. Solano
14. Shasta
15. Sierra
16. San Mateo
17. Napa
18. Marin
19. Trinity
20. Modoc
21. Sacramento
22. Santa Cruz
23. Merced
24. Kings
25. Kern

Presidents of the U.S.

1. Woodrow Wilson
2. Herbert Hoover
3. George Washington
4. Zachary Taylor
5. U. S. Grant
6. Andrew Jackson
7. Theodore Roosevelt
8. William McKinley
9. Rutherford B. Hayes
10. James Garfield
11. Calvin Coolidge
12. Warren Harding
13. James Madison
14. Thomas Jefferson
15. John Adams
16. Franklin D. Roosevelt
17. Lyndon B. Johnson
18. Dwight D. Eisenhower
19. Richard M. Nixon
20. Abraham Lincoln

Universities of the United States

1. Stanford
2. U.S.C.
3. U.C.L.A.
4. Notre Dame
5. Purdue
6. Indiana
7. Michigan
8. San Jose
9. Texas Christian
10. Arizona
11. Oregon
12. N.Y.U.
13. Rice
14. Baylor
15. Florida
16. Auburn
17. Nebraska
18. Colorado
19. Iowa
20. Kansas
21. Texas A & M
22. Army
23. L.S.U.
24. B.Y.U.

Countries of Europe

1. France
2. Germany
3. Spain
4. Italy
5. Britain
6. Denmark
7. Belgium
8. Sweden
9. Norway
10. Austria
11. Hungary
12. Yugoslavia
13. Czechoslavakia
14. Poland
15. Finland

Activity
Level E, Utilization

TITLE: Far-Out Facts

OBJECTIVE: A followup activity for the Categories Game and practice in using reference materials.

MATERIALS: 3x5 cards, numerous reference books

DIRECTIONS: Using a selected reference book, find a far-out, brain-teasing fact. Make up a question about the fact you have selected and write it on the front of an index card. Also, list on the front of the card the specific book you used. Example: World Book, Volume B. See if your friends can find the answer!. Be sure to put the correct answer and the page number on the back of the card.

Activity
Level E, Utilization

TITLE: Students Design A Mini-Center

OBJECTIVE: Series of activities designed to familiarize students with a variety of reference materials

MATERIALS: A variety of reference materials

DIRECTIONS:

1. Encourage the students to explore the library or room resources and compile a complete list of reference books available to them.

2. Divide the class into small groups or committees and have them select a reference book set for investigation.

3. The group completes the worksheet "Surveying Your Reference Book".

4. Students may elect to write out further instructions on the use of their reference set to be used in their mini-center.

5. The committee compiles 20 questions about facts found in their reference set. The questions could be written on index cards. The answer to the question and the volume and page number on which it is found should be listed on the back.

The questions could be humorous, extremely detailed, or highly significant--student's choice. Example: What was Tonto's horse's name? Who gained the most yardage in the NFL in 1971? How many stars in the constellation Orion?

6. Once the student groups have completed their mini-centers, they can rotate to each other's centers, completing a "Surveying Your Reference Book" worksheet and then attempting to answer all the questions. Call it the Far-Out Fact Hunt!

Worksheet
Level E

REFERENCE BOOKS MINI-CENTER

Surveying Your Reference Book

1. What is the title of your reference book set?

2. How many volumes are in your set?

3. How are the volumes arranged? By year, by alphabetical order, by number, by subject?

4. Does your reference book have a table of contents, index, or both?

5. Select a volume and decide how you go about finding information. Do you look first in the table of contents, index, or search alphabetically through the book?

6. Does your book go into detail about the subject? Check the items that it includes:

   Pictures _____ Graphs _____

   Diagrams _____ Tables _____ Maps _____

Activity
Level E, Utilization

TITLE: The Newspaper as a Reference Material

OBJECTIVE: To familiarize students with the format of a newspaper

MATERIALS: Get a copy of a daily paper. Most newspapers will provide teachers with a class set of newspapers.

DIRECTIONS: Examine paper for the following information:

1. How many columns are on each page?

2. Is the news on the front page mostly local, state, national, or international?

3. What seems to be the most important story of the day? Where in the paper is it found?

4. Where is the index located? Which section contains the following information:

   a. Sports

   b. Movies

   c. Weather

   d. Want Ads

5. Investigate the Want Ad Section. List the different categories included at the top of each page; e.g., Homes for Sale--Cupertino.

Optional Activities:

1. Want Ad Hunt--Each student has $100,000 to spend. List items to buy from the Want Ads.

2. Discuss Front Page Layout, Headlines, etc.

3. Find the five W's.

Activity
Level E, Utilization

TITLE: Create a "New World Dictionary"

OBJECTIVE: To use dictionaries independently

MATERIALS: Paper, pencil, railroad board (covers)

DIRECTIONS: Based upon the format of an actual dictionary, each student or group will design a dictionary using imaginary words. The words may be nonsense, science fiction, imaginary, slang, etc.

The format could include the following items:

1. Alphabetical order
2. Guide words
3. Syllabication
4. Pronunciation
5. Syntactical function
6. Page numbers
7. Two columns
8. Heavy type for entry words
9. Capitalization of only proper nouns
10. Illustrations

Supplementary Activities:

1. Discussion of a dictionary format before beginning the project.

2. "Alphabetical Word Hunt" — Teacher says a word, students hunt through dictionary; first student to find word and read its definition gets a point.

3. Etymology (word histories) of the imaginary words. Students write brief paragraphs describing the history of one of their imaginary words.

Activity
Level E, Utilization

TITLE: Telephone Book

OBJECTIVE: To familiarize students with the format of the telephone book and its uses as a reference material

MATERIALS: Phone books

DIRECTIONS:

1. Students can learn the purpose of the white, yellow and green pages of a telephone book by joining in a "Let Your Fingers Do the Walking" game. Process: Begin with the green index, proceed to yellow pages; listings are in alphabetical order.

   a. You live in Los Gatos and you just bought a horse. Where can you go to buy a saddle?

   b. You want to go out to eat at a Mexican restaurant in San Jose. How many choices must you choose from?

   c. Your TV broke down during the World Series. Can you find a repairman who will come to your house on a Friday night at 8:00?

Activity
Level E, Utilization

TITLE: The Popular Magazine as a Reference Material

OBJECTIVE: To acquaint the student with a variety of magazines and the information contained in each

MATERIALS: Magazines

DIRECTIONS:

1. Class compiles a list of current magazines.
2. Each group selects a magazine to investigate.
3. Group oral reports include the following information on each magazine:
   a. Title
   b. How frequently is it published? Weekly, monthly, quarterly, bi-annually, annually?
   c. Who would be interested in reading this magazine? The audience?
   d. Are there illustrations, graphs, color?
   e. Is it easy to read?
   f. What sections are included in the magazine? News, sports, glamour, entertainment, life and leisure, media?
   g. What kind of advertisements are included? Who would be interested in these magazines?

APPENDIX

Part A

Recording Devices

Name _____

Teacher's Name _____ Department _____

STRAND: Maps
SUBSTRAND: Representation

Level A

_____ 1. Representation: Arranges models

Level B

_____ 1. Representation: Uses picture symbols to interpret maps

Level C

_____ 1. Representation

_____ a. Uses a key containing nonpictorial symbols to interpret maps

_____ b. Uses a color key to interpret maps

Level D

_____ 1. Representation: Uses point and line symbols to interpret maps

Level E

_____ 1. Representation: Uses point, line, and area symbols

Level F

_____ 1. Representation: Analyzes maps of two or more areas to determine similarities and differences

Level G

_____ 1. Representation: Synthesizes information about an area

Name _____

Teacher's name _____ Department _____

STRAND: Maps
SUBSTRAND: Orientation

Level A

_____ 2. Orientation: Describes relative positions of objects (Direction)

Level B

_____ 2. Orientation: Locates points on simple picture grids (Grid)

Level C

_____ 2. Orientation: Locates points on number letter grids (Grid)

Level D

_____ 2. Orientation: Indicates cardinal directions on globes (Direction)

Level E

_____ 2. Orientation: Determines intermediate directions on globes, in the environment, and on maps (Direction)

Level F

_____ 2. Orientation: Uses various projections

Level G

_____ 2. Orientation

_____ a. Uses latitude and longitude

_____ b. Determines directions on any projection

Name _____

Teacher's Name _____ Department _____

STRAND: Maps
SUBSTRAND: Measurement

Level A

_____ 3. Measurement: Describes relative sizes ("The Scale")

Level B

_____ 3. Measurement: Determines relative distances ("The Scale")

Level C

_____ 3. Measurement ("The Scale")

_____ a. Compares sizes

_____ b. Expresses relative distances

Level D

_____ 3. Measurement: Uses scale to determine whole units of distance ("The Scale")

Level E

_____ 3. Measurement: Makes limited use of scale to determine distances ("The Scale")

Level F

_____ 3. Measurement ("To Scale")

_____ a. Uses inset maps to determine relative sizes of areas

_____ b. Compares maps drawn to different scales

Level G

_____ 3. Measurement: Makes use of scale to determine distances ("The Scale")

Name _____

Teacher's Name _____ Department _____

STRAND: Graphs and Tables
SUBSTRAND: Tables

Level C

_____ 5. Tables

_____ a. Compares amounts

_____ b. Locates cells

Level D

_____ 5. Tables: Determines relationships between cells

Level E

_____ 5. Tables

_____ a. Determines relationships between cells

_____ b. Determines purposes and makes summary statements

Level F

_____ 5. Tables: Determines relationships between cells and schedules

Level G

_____ 5. Tables: Solves problems on schedules

Name _____

Teacher's Name _____ Department _____

STRAND: Graphs and Tables
SUBSTRAND: Graphs

Level B

_____ 4. Graphs: Compares amounts

Level C

_____ 4. Graphs

_____ a. Extracts directly

_____ b. Determines differences between numbers extracted

Level D

_____ 4. Graphs

_____ a. Determines differences between numbers extracted

_____ b. Extracts by interpolating

Level E

_____ 4. Graphs

_____ a. Determines differences between numbers extracted

_____ b. Determines purposes and makes summary statements

Level F

_____ 4. Graphs: Determines differences between numbers extracted

Level G

_____ 4. Graphs

_____ a. Uses latitude and longitude

_____ b. Determines directions on any projection

Name _____

Teacher's Name _____ Department _____

STRAND: References
SUBSTRAND: Organization and Evaluation

Level D

_____ 8. Organization and evaluation (Organization)

_____ a. Uses headings and subheadings

_____ 8. Organization and evaluation (Evaluation)

_____ b. Selects relevant sources

_____ c. Recognizes printed statements may be fact or opinion

Level E

_____ 8. Organization and evaluation (Organization)

_____ a. Takes notes

_____ 8. Organization and evaluation (Evaluation)

_____ b. Selects specialized reference books

_____ c. Considers special features of books

_____ d. Checks facts from sources

Level F

_____ 8. Organization and evaluation (Organization)

_____ a. Has beginning outlining skills

_____ 8. Organization and evaluation (Evaluation)

_____ b. Uses information on catalog cards to select material

Level G

_____ 8. Organization and evaluation: Makes formal outlines (Organization)

Name _____

Teacher's Name _____ Department _____

STRAND: References
SUBSTRAND: Location

Level C

_____ 7. Location: Applies basic alphabetizing skills (Alphabetizing)

Level D

_____ 7. Location (Alphabetizing)

_____ a. Applies alphabetizing skills

_____ b. Uses guide words in simple reference books

Level E

_____ 7. Location (Application in Library)

_____ a. Uses guide words and guide letters

_____ b. Uses guide cards

Level F

_____ 7. Location (Application in Library)

_____ a. Applies card filing rules

_____ b. Uses Dewey Decimal System

Level G

_____ 7. Location: Uses card catalog to locate reference materials (Application in Library)

Name _____

Teacher's Name _____ Department _____

STRAND: References
SUBSTRAND: Utilization

Level C

_____ 6. Utilization: Develops book skills

Level D

_____ 6. Utilization (Book Skills)

_____ a. Begins to use indexes

_____ b. Has beginning dictionary and glossary skills

_____ c. Uses tables of contents

Level E

_____ 6. Utilization (Book Skills)

_____ a. Refines use of indexes

_____ 6. Utilization (Reference Materials)

_____ b. Uses dictionaries independently

_____ c. Uses cross references

_____ d. Uses a variety of sources

Level F

_____ 6. Utilization (Reference Materials)

_____ a. Uses Subject Index

_____ b. Uses dictionaries for pronunciation

Level G

_____ 6. Utilization: Uses Readers' Guide (Reference Materials)

Study Skills Placement Survey

Class Grid

GRAPHS & TABLES: GRAPHS

Pupil's Name	Graphs: Relative Amounts B4	Graphs: Exact Amounts C4a	Graphs: Differences C4b	Graphs: Differences D4a	Graphs: Approximate Amounts D4b	Graphs: Differences E4a	Graphs: Purposes and Summary E4b	Graphs: Differences F4	Graphs: Multiplicative Difference G4a	Graphs: Projections & Relating G4b
132										

DATA ANALYSIS

Wisconsin Study Skills

STRAND: References
SUB: Utilization

Student Name	C6 Develops book skills	D6a Begins to use indexes	D6b Begins to use dictionary/glossary*	D6c Uses tables of contents	E6a Refines use of indexes	E6b Uses dictionaries independently	E6c Uses cross references	E6d Uses a variety of sources*	F6a Uses subject index	F6b Uses dictionaries for pronunciation	G6 Uses Readers' Guide**

* No pre-test provided
** Not tested at this level (Grade 6)

COLOR KEY:

Red X--failed on pre-assessment test

Yellow box--not on pre-assessment test

Blue box--passed on pre-assessment test

Green box--passed objective

Black box--moved away before passing objective

Data Analysis Groupings

References/
Utilization

C6 Develops book skills

D6a Begins to use indexes

D6b Begins to use dictionary/glossary

D6c Uses tables of contents

E6a Refines use of indexes

E6b Uses dictionaries independently

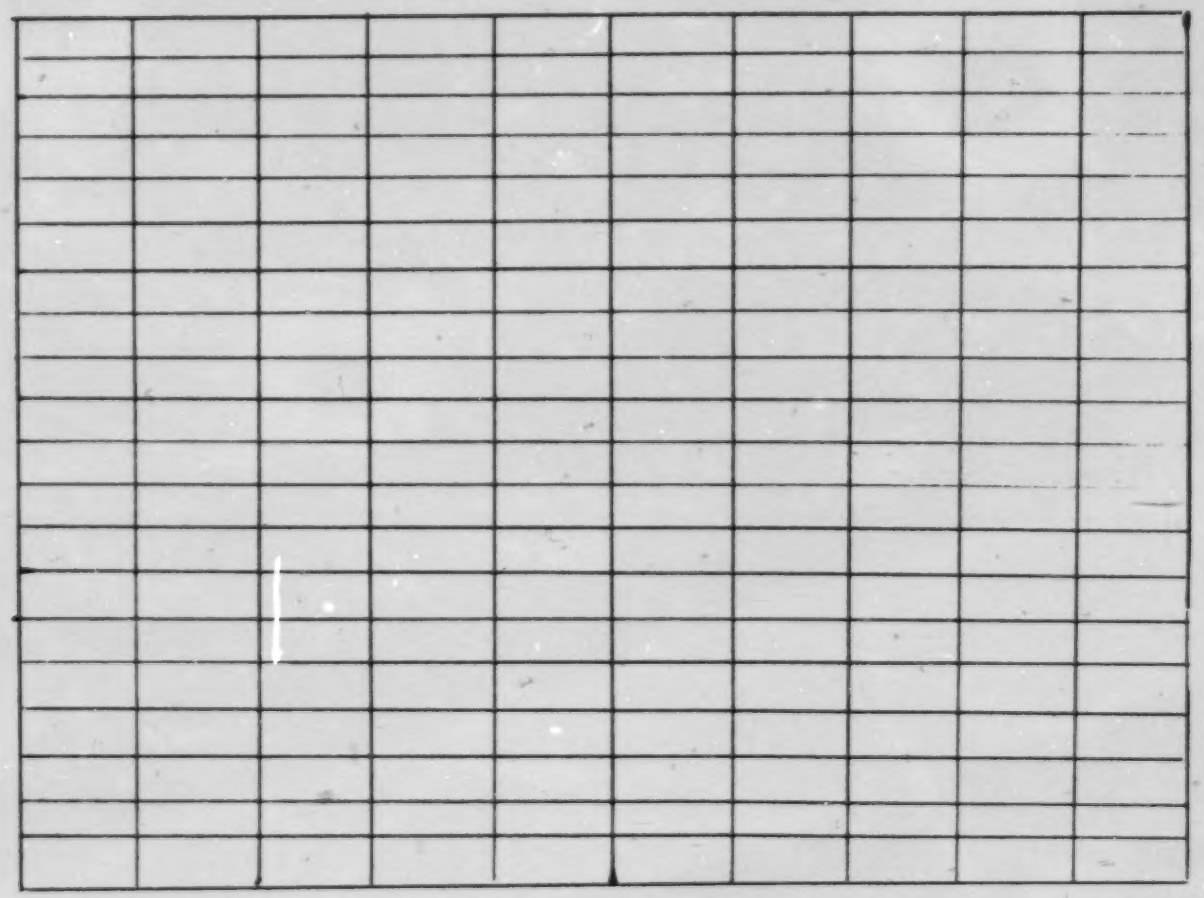
E6c Uses cross references

E6d Uses a variety of sources *

F6a Uses subject index

F6b Uses dictionaries for pronunciation

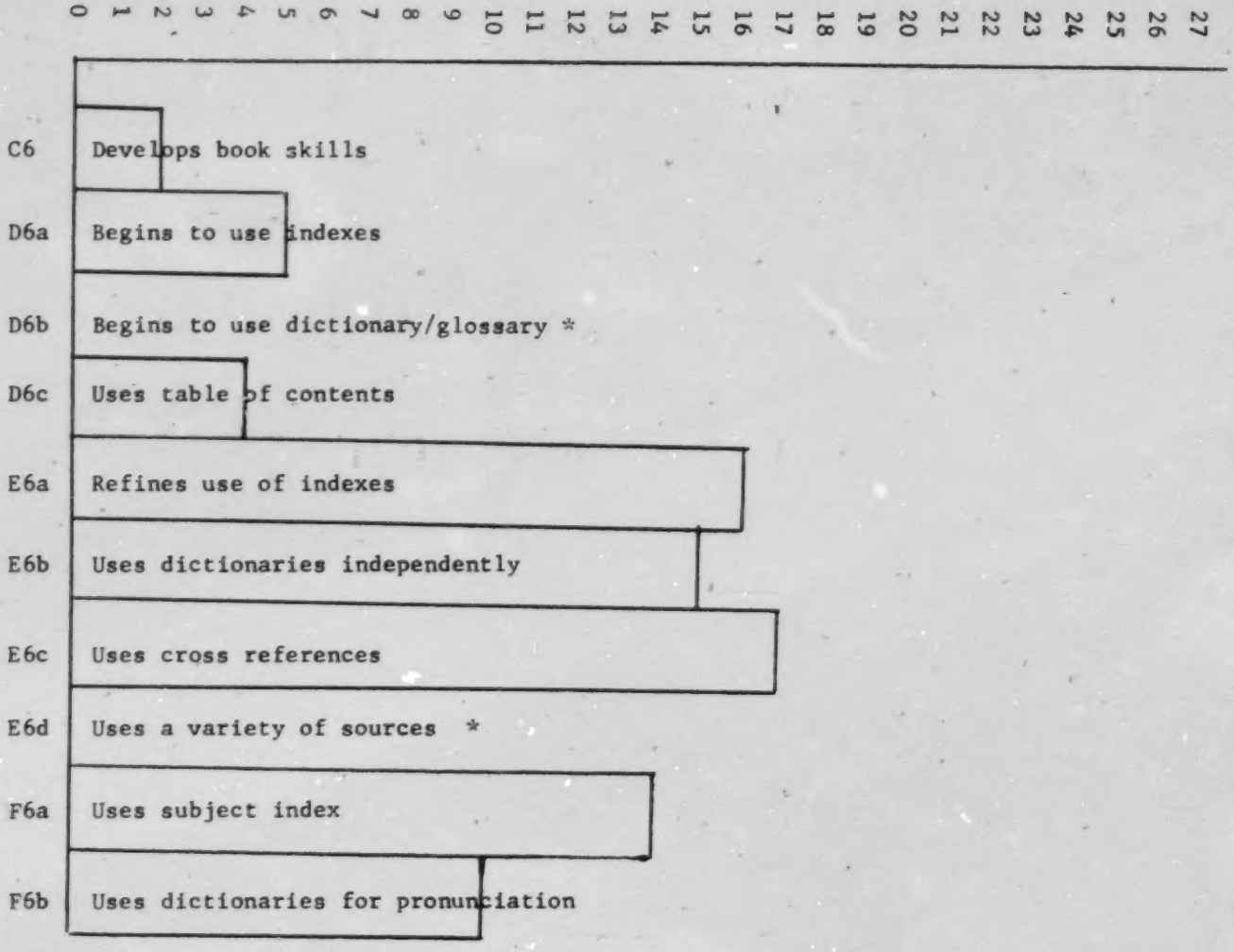
G6 Uses Readers' Guide **



* No pre-test provided

** Not tested at this level (Grade 6)

References/Utilization
Pre-Assessment Test
Graphical Analysis


0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
C6 Develops book skills
D6a Begins to use indexes
D6b Begins to use dictionary/glossary *
D6c Uses table of contents
E6a Refines use of indexes
E6b Uses dictionaries independently
E6c Uses cross references
E6d Uses a variety of sources *
F6a Uses subject index
F6b Uses dictionaries for pronunciation
G6 Uses Readers' Guide **

* No pre-test provided

** Not tested at this level (Grade 6)

1. MAPS/Representation

COMMENTS - ACTIVITIES

Student Name	A1	B1	C1a	C1b	D1	E1	F1	G1	Representation	Orientation	Measurement
1.											
2.											
3.											
4.											
5.											
6.											
7.											
8.											
9.											
10.											
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25.											
26.											
27.											
28.											
29.											
30.											
31.											
32.											
33.											
34.											
35.											
36.											

5 Blue = Mastered

5 Red = Needs to be retaught

2. MAPS

ORIENTATION

Student Name	A2	B2	C2	D2	E2	F2	G2a	G2b
1.								
2.								
3.								
4.								
5.								
6.								
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30.								
31.								
32.								
33.								
34.								
35.								

MEASUREMENT

A3	B3	C3a	C3b	D3	E3	F3a	F3b	G3

PLACEMENT TEST - ANSWER SHEET

NAME | DATE

REPRESENTATION	GRAPHS	UTILIZATION
TABLE RIGHT WRONG		
CHAIR RIGHT WRONG		
BACK RIGHT WRONG		

	LEVEL A							
1.			1.			1.		
2.			2.			2.		
3.	LEVEL B		3.			3.	LEVEL C	
4.			4.	LEVEL B		4.		
5.			5.			5.		
6.	LEVEL C		6.			6.		
7.			7.			7.		
8.			8.	LEVEL C		8.		
9.	LEVEL D		9.			9.	LEVEL D	
10.			10.			10.		
11.			11.			11.		
12.	LEVEL E		12.	LEVEL D		12.		
13.			13.			13.		
14.	LEVEL F		14.			14.		
15.			15.			15.		
16.			16.			16.		
17.	LEVEL G		17.			17.		
			18.	LEVEL E		18.	LEVEL E	
			19.			19.		
			20.			20.		
			21.	LEVEL F		21.		
			22.			22.		
			23.			23.		
			24.			24.	LEVEL F	
			25.			25.		
			26.			26.		
			27.	LEVEL G		27.	LEVEL G	

NO LEVEL A

NO LEVELS A & B

Appendix B

UTILIZATION OF THE

WISCONSIN STUDY SKILL PLACEMENT SURVEYS

Conceptual Design

This series of eight placement survey tests was developed to facilitate the teacher's task of placing the learner in the Wisconsin Study Skills program. The Oak Grove teachers involved in the 1973-74 field test of the Study Skills recommended that the program be taught one strand at a time. For example, the group of learners, be it a class or a sub-group of a class, might all be studying at various levels within the Representation strand. By employing the Placement Survey for Representation, the teacher could place each child at his appropriate level. Only one test need be given.

Placement Survey Elements

There are four items that make up the Placement Survey. These four elements are:

1) Directions for Administering the Placement Survey Test
2) Placement Survey Test
3) Answer Key
4) Answer Sheet

Directions for Using the Placement Survey Tests

Select a strand you wish to teach. After you select a strand, administer the appropriate Placement Survey to your class or group. It is designed as a group test. This means that the teacher reads directions and each child works independently filling in answers on his own worksheet. After the testing, use the answer key to score the tests. The answer key and the teacher directions label the questions sets as to level. The learner is placed in the highest level in which he answers every question correctly. For instance, if the learner answers all level A, B, and C questions correctly and misses a question in level D, he is placed in level C, the highest level in which he answered all questions right. An exception to this is illustrated by the following example. A learner answers all questions A-D correctly. He misses two questions in level E but gets all questions correct in level F. The student is placed in level D. It was found during the summer tryout of the placement surveys that to be accurate the correct answers had to be contiguous. If the above procedure is not used, the student may be placed in a level that is too difficult for him. If the level is too easy, it will soon become apparent by the student's work, and he can be moved to the next higher level.

Steps for Using the Placement Surveys in Outline Form:

1) Select a strand
2) Administer the Survey to the class or group
3) Score the Survey/Placement is done at the same time
4) Group the learners by level for instruction

Appendix C

STATEMENT OF SKILLS AND OBJECTIVES FOR STUDY SKILLS

Level A

1. Representation: Arranges models

   Objective: The child reproduces an arrangement of objects in his environment through the use of three-dimensional models (e.g., the child places blocks on a floor map to reproduce the actual arrangement of houses in his neighborhood).

2. Orientation: Describes relative positions of objects

   Objective: The child describes the positions of objects and representations of objects in relation to other objects and representations with the terms right-left, up-down, on-between, near (beside), behind-in front of (back-front), and below-above (under-over).

3. Measurement: Describes relative sizes

   Objective: The child uses the descriptive terms bigger-smaller, taller-shorter, and higher-lower to compare sizes of objects and representations of objects.

Level B

1. Representation: Uses picture symbols to interpret maps

   Objective: The child uses realistic pictures (e.g., [illegible] to derive information from maps.

2. Orientation: Locates points on simple picture grids

   Objective: The child uses coordinates to locate points and to describe the locations of points on picture grids.

3. Measurement: Determines relative distances

   Objective: The child uses descriptive terms such as closer-further, long way-short way to compare distances between representations of objects as they are arranged in sandbox models, pictures, or maps.

4. Graphs: Compares amounts

Objective: The child uses descriptive terms (e.g., Most, fewest or least, more, fewer or less, largest, smallest) rather than exact numbers to express comparisons of amounts on picture, bar, and circle graphs.

Level C

1. Representation

a. Uses a key containing nonpictorial symbols to interpret maps

Objective: The child uses a key containing nonpictorial symbols (e.g., Lines, dots) to derive information from maps.

b. Uses a color key to interpret maps

Objective: The child uses a color key in which distinct colors identify classes, and no more than three shades of any color identify subclasses, to derive information from maps (e.g., the child reports that there are two areas with sugar maple trees (light blue) and one area with silver maple trees (dark blue).

2. Orientation: Locates points on number-letter grids

Objective: The child uses coordinates to locate points and to describe the locations of points on number-letter grids

3. Measurement

a. Compares sizes

Objective: The child interprets symbols that depict relative sizes of areas (e.g., Lakes, parks, forests) on maps.

b. Expresses relative distances

Objective: The child uses familiar nonstandard units of measurement (e.g., city blocks, houses) to express distances and comparisons of distance on maps.

4. Graphs

a. Extracts directly

Objective: The child notes the number of units represented by a whole symbol and then computes the total number of units in a particular row on a picture graph, and notes the line to which a particular bar comes and reads the number beside the line on a bar graph.

b. Determines differences between numbers extracted

Objective: The child compares, by adding or subtracting, the exact amounts represented by given bars on a simple bar graph.

5. Tables

a. Compares amounts

Objective: The child uses descriptive terms (e.g., most, fewest or least, more, fewer or less, largest, smallest) to compare quantities in cells on tables with five or fewer rows and columns.

b. Locates cells

Objective: On tables with five or fewer rows and columns the child finds the point of intersection of a specified row and a specified column and derives information from it.

6. Utilization: Develops book skills

Objective: The child
locates and knows the purposes of the title page, table of contents, and index of a book
finds the title and author's name on the title page.

7. Location: Applies basic alphabetizing skills

Objective: The child alphabetizes words by attending to the first and second letters.

Level D

1. Representation: Uses point and line symbols to interpret maps

Objective: The child uses point and line symbols to derive qualitative and quantitative information from maps (e.g., the child identifies the largest city on a map as the one represented by the largest circle).

2. Orientation: Indicates cardinal directions on globes

Objective: The child indicates on a globe
north and south with reference to the North Pole, South Pole, and equator
east and west with reference to the Prime Meridian.

3. Measurement: Uses scale to determine whole units of distance

Objective: The child uses a scale bar referent (0 ——— 1 miles) or verbal referent (1 inch = X units) to determine and compare distances between points
one or more referent units apart when one referent unit equals one standard unit of measure (e.g., 1 inch = 1 mile)
one referent unit apart when one referent unit equals more than one standard unit of measure (e.g., 1 inch = 20 miles).

4. Graphs

a. Determines differences between numbers extracted

Objective: The child compares, by adding or subtracting, the exact amounts represented by whole symbols in given rows on a picture graph and pairs of numbers extracted directly from a simple line graph.

b. Extracts by interpolating

Objective: The child determines approximate amounts on picture graphs with whole and partial symbols and on bar or line graphs with bars of dots representing numbers that fall between those marked on the axis.

5. Tables: Determines relationships between cells

Objective: The child determines, by adding or subtracting, the difference between two specified cells on a table with five or more rows and columns, totals for each row and column, and familiar units for denominate numbers.

6. Utilization

a. Begins to use indexes

Objective: Having identified a general topic, the child uses the indexes of books to locate information about the topic.

b. Has beginning dictionary and glossary skills

Objective: The child
locates, finds words in, and demonstrates his knowledge of the purpose of a glossary
recognizes similarities and differences between a glossary and a dictionary
uses a dictionary to check the spelling of words as needed.

c. Uses tables of contents

Objective: The child refers to the table of contents to determine if a book is relevant to his specific purpose to locate a particular chapter or section in a book.

7. Location

a. Applies alphabetizing skills

Objective: The child alphabetizes words by attending to all letters.

b. Uses guide words in simple reference books

Objective: The child locates the appropriate alphabetical section of a reference book for a given topic or target word by attending to the alphabetic sequence of guide words.

8. Organization and evaluation

a. Uses headings and subheadings

Objective: Given a general topic in a reference book, the child decides which heading or subheading is most appropriate for locating specific information.

b. Selects relevant sources

Objectives: Given several topics, the child chooses from among a list of available sources those that are likely to include relevant information on the topics.

c. Recognizes printed statements may be fact or opinion

Objective: The child determines whether given statements represent fact or opinion.

Level E

1. Representation: Uses point, line, and area symbols

Objective: The child uses point, line, and area symbols to derive qualitative and quantitative information from maps.

2. Orientation: Determines intermediate directions on globes, in the environment (e.g., the child matches objects shown on a map with objects in his environment to determine direction).

3. Measurement: Makes limited use of scale to determine distances

Objective: The child uses a scale bar referent (0 —— 1 miles) or verbal referent (1 inch = X units) to determine and compare distances between points one or more referent units apart when one referent unit equals two or more standard units of measure (e.g., when 1 inch = 3 miles, the child concludes that 3 inches = 9 miles).

4. Graphs

a. Determines differences between numbers extracted

Objective: The child compares, by adding or subtracting, the amounts represented by bars at or between the lines on a bar graph.

b. Determines purposes and makes summary statements

Objective: On picture, circle, bar, or line graphs the child
surmises the objective of the presentation by considering all of the parts (e.g., the child determines from the title, dimensions, and nature of content that a graph shows the number of ships built in three countries during ten consecutive years)
summarizes all of the data presented (e.g., the child concludes from the graph in the above example that one country is the major source of overall production).

5. Tables

a. Determines relationships between cells

Objective: The child determines, by multiplying or dividing, the difference between two specified cells on all types of tables.

b. Determines purposes and makes summary statements

Objective: On any table the child
surmises the objective of the presentation by considering all of the parts (e.g., the child determines from the title, dimensions, and nature of content that a table shows the of ships built in three countries during ten consecutive years)
summarizes all of the data presented (e.g., the child concludes from the table in the above example that one country is the major source of production for one particular year, while another country is the major source of overall production).

6. Utilization

a. Refines use of indexes

Objective: Given a general topic, the child uses the indexes of books or the index volume of an encyclopedia to locate information regarding specific topics (e.g., SPACE, Space travel: development of flight plan, history of).

b. Uses dictionaries independently

Objective: The child uses a dictionary to check the meanings of words as needed.

c. Uses cross references

Objective: The child
locates a topic in response to a SEE reference (e.g., having located "Mohawk Indians, See Iroquois Indians," the child locates the topic)
locates supplementary material in response to a SEE ALSO reference (e.g., having located the topic "Iroquois Indians," the child locates additional material in response to "See also Indian, American /Eastern Forests Indians/").

d. Uses a variety of sources

Objective: The child
adapts his utilization skills to the idiosyncrasies of format in atlases and sets of encyclopedias (e.g., he can locate a given topic in encyclopedias with individual volume indexes, no indexes, and multivolume indexes; he can locate specific maps in atlases)
familiarizes himself with magazines and newspapers as sources specialized and/or current information
uses the vertical file.

7. Location

a. Uses guide words and guide letters

Objective: Given guide words or letters, the child
specifies the card catalog drawer in which specific words, names, or topics are found
specifies the page on which specific words are found in a reference book.

b. Uses guide cards

Objective: To locate information in the card catalog, the child
uses guide cards in the drawers
ignores initial articles in titles.

8. Organization and evaluation

a. Takes notes

Objective: The child
takes notes from varied sources in a form that is useful to him in retrieving information
identifies his sources in simple bibliographical form.

b. Selects specialized reference books

Objective: The child selects the specialized reference book (e.g., World Almanac or Information Please Almanac, Junior Book of Authors, dictionaries, encyclopedias, atlases, and other specialized reference books) that is most likely to include the information for which he is looking.

c. Considers special features of books

Objective: The child
examines books to judge their relevance to his purpose (e.g., the child considers whether the book includes relevant information by scanning locational and study aids as well as pertinent illustrations)
consults the bibliography of a book to help locate other materials of interest.

d. Checks facts from two sources

Objective: The child identifies discrepancies between simple factual data from two sources.

Note: When children identify these discrepancies through the classroom research, they should be directed to discover why two sources provided different answers (e.g., is it their error in notetaking; is one source out of date; are the graphs, tables, etc., labeled differently?).

Level F

1. Representation: Analyzes maps of two or more areas to determine similarities and differences

Objective: The child makes comparisons of geographic areas in terms of topographic, climatic, political, and demographic information provided on maps.

2. Orientation: Uses various projections

Objective: The child locates the same point or cell on various projections (e.g., polar, Mercator).

3. Measurement

   a. Uses inset maps to determine relative sizes of areas

      Objective: The child determines relative sizes of two or more areas drawn to different scales by comparing the inset maps which are all drawn to the same scale (e.g., the child determines that even though his maps of Rhode Island and Texas are indeed larger since the area of Texas outlined on an inset map of the U.S. is much larger than the area outlined for Rhode Island).

   b. Compares maps drawn to different scales

      Objective: The child identifies differences (e.g., amount of detail) between maps of the same area drawn to different scales (e.g., 1 inch = 1000 miles, 1 inch = 100 miles, and 1 inch = 50 miles).

4. Graphs: Determines differences between numbers extracted

   Objective: The child compares
   pairs of numbers interpolated from a complex line graph by adding or subtracting
   pairs of numbers extracted directly or by interpolation from a complex bar graph or simple line graph by multiplying or dividing.

5. Tables: Determines relationships between cells on schedules

   Objective: The child uses numbers and descriptive terms to report the relationships among cells (e.g., on a plane schedule the child notes that there are five more evening flights than afternoon flights between Baft Field and Clayville, but the earliest evening flight is not until 8:00 p.m.).

6. Utilization

   a. Uses <u>Subject Index</u>

      Objective: The child uses <u>Subject Index to Children's Magazines</u> for locating materials in children's magazines.

   b. Uses dictionaries for pronunciation

      Objective: The child uses the diacritical markings in a dictionary to interpret the pronunciation of unfamiliar words.

7. Location

a. Applies card filing rules

Objective: The child locates target cards by applying these filing rules:
names beginning with either Mac or Mc are filed together as if all were spelled m-a-c
common abbreviated words (e.g., Mr.) are filed as if they were spelled out
numbers are filed as if they were spelled out.

b. Uses Dewey Decimal System

Objective: In the library the child locates books according to specific subject areas within the ten major groupings of the Dewey Decimal System.

8. Organization and evaluation

a. Has beginning outlining skills

Objective: Given the major points in a formal outline, the child selects and fills in second-order points from well-organized paragraphs written at his instructional level of difficulty (e.g., given the outline

I. Different kinds of birds are alike in many ways.
   A.
   B.
   C.
II. A bird's feathers are useful.
   A.
   B.

and paragraphs about likenesses among different kinds of birds and usefulness of bird feathers, the child completes the outline).

b. Uses information on catalog cards to select material

Objective: The child uses the information given on a catalog card (e.g., date of publication, publisher, number of illustrations, type of illustrations) to decide whether the book or other material is appropriate to his purpose.

Level G

1. Representation: Synthesizes information about an area

Objective: The child uses a variety of maps of a given area to determine specific characteristics (e.g., using topographic, climatic, political, and demographic maps of a particular area, the child infers that since the area has average rainfall, gently rolling hills, and a moderate climate, the occupations of the inhabitants may be mostly farm-oriented).

2. Orientation

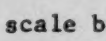
   a. Uses latitude and longitude

      Objective: The child uses lines of latitude and longitude to locate points on a map or globe (e.g., the child notes that New York City is 40° north latitude and 74° west longitude).

   b. Determines directions on any projection

      Objective: The child uses meridians and parallels to determine directions on any projection (e.g., on an elliptical projection with the Prime Meridian at the center, the child traces the meridian from a given point to the pole to show north or south).

3. Measurement: Makes use of scale to determine distances

   Objective: The child uses a scale bar referent () or verbal referent (1 inch = X units) to determine and compare distances between points that are combinations of fractional and whole referent units apart when one referent unit equals two or more standard units of measure (e.g., when 1 inch = 10 miles, the child concludes that $2\frac{1}{2}$ inches = 25 miles).

4. Graphs

   a. Determines differences between numbers extracted

      Objective: The child compares, by multiplying or dividing, pairs of numbers extracted directly or by interpolation from complex bar or line graphs.

   b. Makes projections and relates information

      Objective: The child states probable outcomes or trends on picture, bar, and line graphs (e.g., having observed a trend shown, the child predicts future performance) and relates the information presented and the projections derived to his previous knowledge.

5. Tables: Solves problems on schedules

   Objective: Given any schedule, the child derives information from it to answer a specific travel problem (e.g., given a plane schedule and the circumstances that Mr. Jones must travel from Chicago to Los Angeles and back between 6 a.m. and 7 p.m., the child determines that Mr. Jones must leave on West Air flight #203 and return on flight #46).

6. Utilization: Uses "Readers' Guide"

   Objective: The child uses "Abridged Readers' Guide to Periodical Literature" for locating material in general adult magazines.

7. Location: Uses card catalog to locate reference materials

   Objective: In the library, the child
   identifies author, subject, and title cards in the card catalog
   uses these cards to locate fiction and nonfiction books and other materials.

   Note: Included among other materials are such things as games, filmstrips, films, records, photographic equipment, etc., which may be found in a well-stocked library.

8. Organization and evaluation: Makes formal outlines

   Objective: Given selections written at his instructional level of difficulty, the child
   selects the major topics
   groups the subtopics as in a formal outline.